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Spatiality in higher education: a case study in integrating pedagogy, community engagement, and regional development

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Abstract: Higher educational institutions (HEIs) are expected to contribute to local economies and the working life through collaboration and regional development. Increasing demands and diminishing resources call for innovative solutions. We discuss the benefits of integrating education and regional development in HEIs through spatiality. We build on community engagement, knowledge transfer, spatiality and the Triple Helix; identifying a HEI's knowledge and people flows. We apply the frame to a case study of a university of applied sciences in Finland. Results suggest that there are a number of ways in which a HEI can collaborate with local industries and strengthen its regional impact without significant structural trade-offs and while supporting pedagogy. The results have implications for higher educational institutions, particularly, concerning the agile, transportable educational space concept. The study raises an important issue related to the assumptions of what makes a university: physical presence versus knowledge flows.

Keywords: higher education; regional development; engagement; spatiality; Triple Helix; Finland.

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1 Introduction

Connections between higher educational institutions (HEIs) and the local economies are very much in focus today. The path from education to employment faces hurdles, as HEIs and the rest of the economy are seen to ‘operate in parallel universes’ (Phoewhawm, 2012; de Silva Alves et al., 2015). However, few HEIs can see themselves as existing in a ‘vacuum’ anymore.

One way of ensuring closer connections between education and the region is through partnerships and joint projects with local business and industry. Closer partnerships with businesses and other organisations will also improve a HEI’s potential for providing knowledge to the community. This could be seen as an important output of higher education to the region (Goddard and Chatterton, 1999). HEIs possess vast bodies of knowledge, which should be put into use in fostering innovation and ensuring its transfer into practice. There is an increasing demand for knowledge sharing and knowledge dissemination in higher education.

Although HEIs’ regional relations have been studied rather extensively, Kenney and Mowery (2014) highlight that there is surprisingly little known about the field, particularly in terms of knowledge flows and a HEI’s active role in the region. Community engagement ranges from extrinsic engagement programs to highly developed partnerships and industry-government-HEI collaboration. Part of the discrepancies in the literature may result from the fact that community engagement can take a number of forms. Public universities have always had a level of responsibility with local communities, particularly in the USA, after the establishment of land grant institutions in 1862. However, today’s problems require a new approach to community engagement.

As Feinblatt (2009, p.3) states, regional development should be seen as ‘higher level of involvement’ as opposed to conventional outreach programs and partnerships. Higher involvement is seen in the level of commitment in HEI leadership, in the number and variety of stakeholders, and in the scope of involvement within the HEI. Commonly, community outreach is a third assignment for HEIs. Only when it is linked to and lined up with the HEI’s strategy, however, is ‘regional development’ met. Moving from the level of an individual HEI to the societal level, one can claim that a functioning Triple Helix relies on deep integration and close commitment.

New demands exerting pressure on innovation systems are causing shifts in the Triple Helix, which amplifies the need to reassess a HEI’s community engagement. This is even more crucial in the Nordics, where HEIs can have closely integrated connections to the private, public and third sectors. As opposed to the more prevalent thinking in community outreach programs, a HEI’s regional development can be seen through shared knowledge creation, joint innovation activities and driving economic action.

From the point of view of knowledge creation, innovation and economic development of regions, issues in proximity are central. Proximity, closeness, or reduced distance between the actors in the system is assumed to facilitate cooperation and knowledge dissemination (Harmaakorpi and Melkas, 2012). Hence, to improve a HEI’s possibilities in regional development, it is necessary to be ‘close’ to the partners in the region. However, proximity contains many dimensions, and geographical closeness is only one of them. There are equally important institutional and cognitive dimensions as well (Boschma, 2005).

The traditional way of thinking about the HEI's sphere of influence is based on its location. However, development in online education, the economic pressures that higher education faces, and the networking of knowledge production, have challenged this thinking (Chatterton and Goddard, 2003). It appears HEIs need to broaden their spheres and perhaps break some of the boundaries, whether physical or non-physical.

Challenging these existing boundaries poses challenges for educational institutions. We think the changes affect three aspects of the interaction: how knowledge is produced, with whom it is produced, and where the creation of knowledge takes place.

These changes are hardly new: there are multiple novel examples of 'how' educational knowledge creation takes place. Examples include joint projects, partnerships, and taking learning inside businesses' premises. Also, the 'with whom' part is largely developed. HEIs are in closer cooperation with businesses, developing closer partnerships. As the borders between education and the world of work are diminishing, it becomes more and more important to think about the locations of the knowledge creation; the 'where'. Although all knowledge creation takes place somewhere, there is less research on the specific locations in the changing landscape of knowledge creation.

In this article, we describe a potential way of combining the traditional education and research functions of higher education with the development and innovation functions that take place in collaboration with the world of work. There are multiple conflicting demands that HEIs face today. Financial pressures and ICT developments call for regional impact and adaptability drive HEIs toward new kinds of operation. A synergetic path to providing knowledge to students as well as local communities is lucrative in the light of the conflicting demands. However, the traditional way of thinking of a HEI's engagement and spatiality is a major hurdle in this transformation.

The purpose of the article is to provide new understanding of the forms of learning-based regional development that take place in a HEI's knowledge networks. More specifically, the purpose is to examine where regional development takes place and in what form it takes in a HEI's network activities. In practical terms, these research questions provide light on how a HEI can regroup and reorganise its operations into something that corresponds better to the needs of the global, networked information society.

In Sections 2 and 3, we discuss the tensions found between the increasing need for regional adaptability, flexibility and agile reactivity in HEI on the one hand; and on the other hand, the regional, locational dependencies that make it difficult for HEIs to transform into a people-based geography of information flows, rather than physical presences. These tensions call for new solutions that are closely related to how spatiality is constructed. In Section 4, we introduce our case-organisation and in Sections 5 and 6, we provide an example of one possible way of addressing the issues through a network analysis of a Finnish university of applied sciences. The case organisation addresses spatiality with what we term 'moving space'. In the discussion, we provide ideas for furthering the findings in community engagement in general.

2 The interplay of regional development and learning

New challenges demand new approaches, as the role of the HEI in the Triple Helix is changing (Arbo and Benneworth, 2007). The Triple Helix refers to interaction and

collaboration between higher education institutions, industry and the government. It is used to describe the change in the knowledge society that features a more prominent position of HEIs in innovation, more collaboration between the parties, and new and mixed roles of the parties.

The interplay of collaboration between higher education and the world of work manifests itself in a number of ways, which tend to have their own challenges and opportunities (Phoewhawm, 2012; de Silva Alves et al., 2015). For most HEIs, integrating education, research, and innovation with other actors is expected to be self-evident (Barton and Dlouhá, 2011). In Finland, Universities of Applied Sciences have been assigned the task of regional development in law (Finlex, 2014). Education and pedagogy are expected to be integrated into R&D and conducted in collaboration with local enterprises, organisations, and public administration, in other words, the Triple Helix.

An active and well-structured Triple Helix has been considered an elementary part of a regional innovation system. In the contemporary networked, global and digital knowledge economy, the Triple Helix is in a flux and morphing into something new (Cooke and Leydesdorff, 2006). Today's innovation systems increasingly consist of networks, where the boundaries between individual participants are not always clear-cut.

In the Triple Helix, the role of the educational institute has been to produce new information (novelty production), the industry's task has been to create business out of it (wealth production) and the government's role has been to ensure public control and coordination (normative control; Leydesdorff and Meyer, 2006). However, these roles are changing. We are seeing HEIs take the place of entrepreneurs as well as innovation organisers. As Arbo and Benneworth (2007, p.9) note, "...it is expected that the knowledge institutions not only conduct education and research, but also play an active role in the development of their economic, social and cultural surroundings. In other words, they are entrusted with a regional mission".

This regional mission of HEIs is manifest in contemporary discourse on higher education's tasks. As Chatterton and Goddard (2003) note, "...the emerging regional development agenda requires regional engagement to be formally recognised as a 'third role' for universities, fully integrated with mainstream teaching and research."

A formal regional mission implies holistic engagement in regional development that can be seen as a disruptive shift in the role of the HEI. Feinblatt (2009, p.4) describes regional development as a higher level of university engagement than conventional outreach programs and workplace partnerships. According to Feinblatt (2009), regional development is "a long-term commitment to a public agenda benefiting the greater region in direct collaboration with other regional stakeholders". This thinking differs from the traditional 'linear way' of approaching community outreach, where information and innovation transfer characterise the HEI's role in the community. What further differentiates regional development from community outreach is the level of engagement: whether the HEI views community engagement as an external do-good activity or a significant part of the HEI's core mission (Mohrman and Shi, 2009).

Although community outreach and closer industry relations have been in focus in the USA as well as in Europe, it appears actually very little is known about the dynamics of these relationships and the HEI's impact on regional development in terms of bidirectional, informal knowledge flows [Kenney and Mowery, (2014), p.2].

It seems we are moving in a direction where learning needs and regional demands are increasingly mixed. HEIs need to identify their critical role as knowledge and innovation providers in the region. Arbo and Benneworth (2007) suggest that HEIs are at a crossroads in the innovation space, as they have become strategically important in terms of innovation – and at the same time, they are the crossroads where different actors and participants pass through. This raises the importance of the university as a node in the innovation system.

This leads to an interesting tension. Regional development is greatly determined by what knowledge and information travels in the network (Chatterton and Goddard, 2003). Traditionally, however, the impact of an educational institution has been based on its regional presence. For example, as Andersson et al. (2004) discuss, a HEI's presence can have a significant effect on a region's productivity. The productivity results in part from the HEI's direct employment: new staffs are largely bound to their work sites. However, there is also a significant spillover effect to the local community.

Considering all of the various demands that HEIs face, it seems that another approach is needed. While HEIs' regional impact is more important than ever, it is also simultaneously becoming less tied to the region in a spatial sense. For example, Leydesdorff (2006) notes that a sole focus on the region is no longer sufficient when considering innovation systems. A region-based innovation system is very vulnerable to the presence of a single key actor. If a key innovator company moves out of the region, the entire system will suffer. Hence, assessment of regional impact should include the key flows, stocks and functions in these systems as well (Leydesdorff, 2006).

Leydesdorff (2006) suggests that the complex interaction of HE, the industry and the government features several interdependent levels. The first of these relates to the positions of the actors in the system. The system participants can differ in their preferences, expectations and roles. From this dimension, we can construct a 'geography' representing their positions. Secondly, there is interaction between the parties of the innovation system. This can result in different transactions. Third, there is information embedded in various parts of the system. It can be tied to the interactions, or the network positions (Morgan, 2004; Leydesdorff, 2006).

What then do these shifts and new demands imply for higher education? Learning, innovation, and solving real-world problems need to be addressed in new ways and HEIs need the capabilities to meet the requirements of long-term collaboration with the world of work (de Silva Alves et al., 2015). Part of the shift that education faces relates to changing roles. Today's challenges increasingly call for flexible, iterative and networked problem solving.

The new demands for problem solving imply that a HEI needs to approach knowledge creation in a new way. As Gibbons et al. (1994) discuss, education needs to shift from the homogenous, science-based knowledge creation ('mode 1') to a heterogeneous, practical and social process ('mode 2'). Innovation in the realm of mode 2 requires an open environment where all parties can provide inputs, regardless of their formal roles. In mode 2, knowledge is created in practical applications just as it is created in theoretical research. Harmaakorpi and Melkas (2012) suggest that HEIs can have important effects on innovation systems, if one assumes a broad perspective to innovation. The role of education in the innovation system can take multiple forms. The University of Applied Sciences has an important position in bringing science-based

knowledge to the market through doing, using, and interacting (DUI) activities and mode 2 knowledge production.

Moving from mode 1 to mode 2 may be challenging, particularly when students are involved. Phoewhawm (2012) describes the difficulties students may face while collaborating with the world of work without sufficient metacognitive and reflective skills. This raises the importance of supporting students' transitioning skills, which are an important part of the shift between education and the world of work. Highly networked and dispersed online information resources exacerbate some of the issues that students face in today's educational landscape (Zhao, 2015).

3 Spatiality and locational dependencies in higher education

Higher education faces an interesting challenge. Regional impact and engagement needs to be improved, closer ties with the innovation systems must be developed, and at the same time, resources are diminishing. One way of balancing between these demands relates to rethinking the HEI's spatiality and the spaces of interaction.

Developments in information technology and globalisation are making the relationships of people, places, and organisations more complex than in the past. In a sense, social relations are expanding over space. The new spatiality of social relations consists of physical flows of people as well as virtual flows of information (Massey, 1994; Batty and Miller, 2000). In fact, virtual access and virtual presence are both substituting and complementing physical access (Miller, 2007). Integrating virtual and physical access and presence requires a new spatial awareness.

Information technology enables actors – students, teachers and business representatives – to collaborate and communicate regardless of their location. Spatiality of social interaction has changed dramatically. Castells (2000) has conceptualised this new form of spatiality as the space of flows. Knowledge creation and information distribution in the space of flows is not restricted by physical proximity. Social processes can stretch from local to global according to requirements. At the same time, the space of flows requires us to understand and develop localities as nodes in information networks.

Traditionally, the impact of an institution has largely relied on its regional location. In the era of global information flows, a HEI needs to define its regional engagement through the flows of knowledge that take place in its networks. The presence of a campus or a research unit is no longer an accurate single measure of the regional ties of the HEI. HEIs need to assess the flows of information from and to the campuses, in online services, and in other interactions.

In a sense, the spatial restructuring of knowledge creation should affect the spatial structure of HEIs as well. It seems a new approach to spatiality in higher education is needed; one that is more active, dynamic and process oriented. From the perspective of spatiality, the space where a HEI resides is not static. Also, the concept of space consists of more than just physical dimensions. In addition to the region, it is necessary to assess the social networks in which HEIs are embedded and where they take a proactive role. According to Massey (1994), space should not be considered a container within which the world exists and proceeds, as the social processes and interaction that create the space are dynamic.

An interesting aspect related to a HEI's regional impact are learning regions and clusters. The learning region is a space where the main actors are strongly connected with each other. In a sense, close engagement of HEIs into regional development seems to call for such regions. However, in practice it is difficult to define the boundaries of a specific learning region. Hassink (2005) prefers the learning cluster, which is a more process-oriented way of conceptualising the phenomenon. Furthermore, regional learning is less and less narrowed to the local. In fact, "there are different clusters within one region, with differing learning processes, different global production networks and different national administrative systems" [Hassink, (2005), p.20].

On the other hand, it is important to note that even within learning clusters, a relationship often takes place at a particular locus. For example, Morgan (2004) argues that physical proximity and access are necessary in certain forms of knowledge exchange. It appears that we need to see the virtual and global networks as complementary flows to the physical, locally rooted interactions. HEIs need to acknowledge the need for local, regional networks as well as flexible, immaterial interactions in creating learning opportunities.

Traditionally, the place has been a key determinant of impact, which is presumably why traditional HEIs are often found in central and prestigious locations. However, Miller's (2007) argumentation suggests that the focus on location is actually based on our assumptions of accessibility rather than the place itself.

Accessibility refers to an actor's ability to conduct activities within a given environment. The ability to be present at locations where activities such as education and R&D take place has traditionally required physical transportation of people to these active locations. Place-based accessibility assumes that people must be physically present at a location where activity occurs and that activities are tightly coupled with place. In contrast, the people-based perspective is more dynamic and focuses on the individual in space and time. People-based accessibility studies individuals' social relations and activities, their distribution in space and time, and the resources needed to overcome spatial separation of activities (Miller, 2007).

4 The case organisation

The case organisation, Laurea UAS, is a Finnish University of Applied Sciences. At the time of analysis, Laurea had seven campuses in six cities and towns. The campuses were all separate business units with a considerable amount of autonomy.

Laurea focuses on producing new competences in service innovations and carries out professionally orientated education, regional development and research and development activities. Laurea's focus areas are holistic health and wellbeing, social integrity and responsibility, security governance and service design and innovative future business models. Focus areas provide a platform for research, co-designing, testing, assessing, modelling, implementing and distributing service innovations. Students, innovative start-ups and businesses, end-users, public authorities and organisations, regional policymakers and HEIs are involved in co-designing relevant services and social innovations within focus areas. Laurea operates in the Greater Helsinki Region in Southern Finland, employs approximately 500 personnel and has ca. 8,000 students, of which ca. 1,200 study in adult education programs.

Integration of the pedagogical, research, and regional development tasks challenges HEIs. Laurea approaches this through an original approach: its curricula are built on a proprietary pedagogical model 'learning by developing', or LbD. LbD is a practice-oriented approach that relies on authentic cooperation with the world of work, learning projects, and an active role of the students. It can take multiple forms, but most often LbD manifests in development projects that students handle for Laurea's regional partners. The learning projects are 'real' in that they represent the partner's reality and multitude. The student's task is to analyse the potential problems, use relevant literature, and make suggestions for the partner. Learning results are very good, as learning is closely tied to real life issues. Students perceive the method motivating, although demanding.

Laurea has been developing its pedagogical model since 2002. As Taatila and Raij (2012) describe, the learning model grew as a response to the increasing need of integrating pedagogy, R&D, and regional development. The purpose is to take authentic problems and situations from the world of work and turn them into learning opportunities that result in problem solving potential. The new skills, capabilities and knowledge that participants learn align with the curricula yet also produce new services, new organisational cultures, or operational models for the regional partners.

The LbD model was audited in 2008 (Vyakarnam et al., 2008). Some of the main findings in the international audit are that the pedagogical model creates a sense of ownership, is driven by values and takes a holistic view. Importantly, LbD holds that students can 'do things'. This differs from the conventional view of learning, where correct information, tests and book knowledge tend to be in focus. In LbD, students are seen as being equipped with investigative and social skills in addition to expertise in the subject. These underpinnings and the integration of learning in the world of work have powerful results: post-degree employment among Laurea's students is among the highest in the country, with only 3% of students being unemployed one year after graduation.

For business and other partners, LbD provides a way to gain new input into everyday problems and operational issues. Hence, it is a way that supports the regional development task of the university. Laurea's close cooperation with local organisations is crucial in order to be able to offer different types of joint learning and development projects. To achieve this end, flexibility and agility are required.

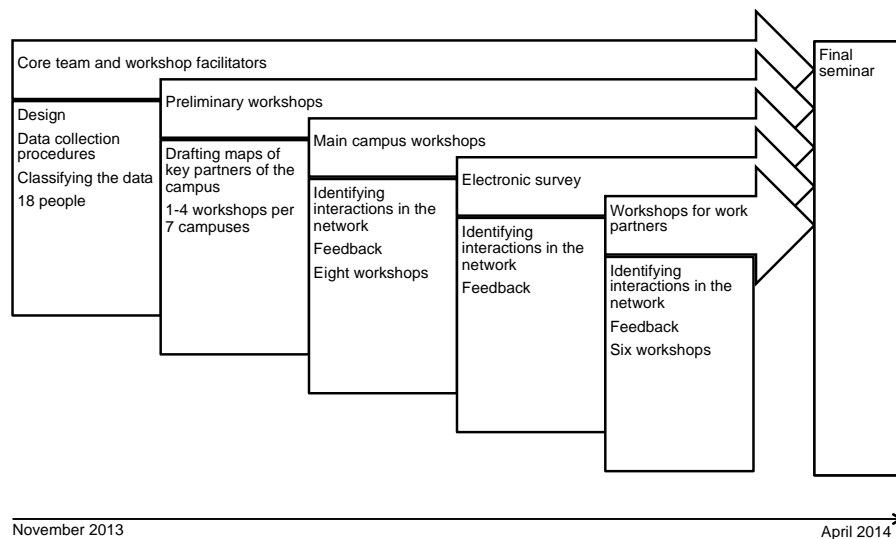
5 Methodology and data collection

To address the dynamics and flows in the case organisation's regional network, we adopted the tools of social network analysis, particularly, the interactions within the network and the flows of knowledge (see e.g., Borgatti et al., 2009). The focus is not on the actual networks and their composition, and findings relating to these are not presented. The analysis aims to identify activity links between the parties.

The study relates to a larger organisational change in a HEI in Finland. As the demands for HEIs are changing and resources diminishing, the country's Ministry of Education has set stringent requirements for the sector. There is a need to improve the quality of HEIs' regional impact in Finland. The research process took place in parallel with the organisational change process. Because of this, a comprehensive program was setup, including numerous workshops and thousands of interactions.

At the outset, it was clear that there would be a very large amount of data involved. To keep the data manageable, we collected the data in multiple workshops on the campuses. The cascading structure of data collection is delineated in Figure 1.

Figure 1 Structure of the research process



Data was collected in multiple contact points with staff and regional stakeholders. Participation to the staff workshops was open to all of the personnel. As complete participation was sought by the HEI's management, campus seminars and an electronic survey were designed to support the workshops.

Workshop facilitators were recruited from Laurea's staff. An open call to participate was distributed to all of the personnel, including teaching staff, support personnel, researchers and management. Facilitators were requested to submit an application outlining their experience and expertise in regional issues, and the most qualified persons were selected as part of the research team. For the seven campuses, we dispatched a team of 14 people to run the workshops. Depending on the size and diversity of the campus, one to four workshops were held. These people formed the research team, facilitated the workshops and participated in coding the data. All work with regional services, hence improving validity of the results.

After the initial workshops, a first round of results were collected and presented to staff in eight seminars covering all of the seven campuses' staff and on dedicated to the support services staff. In all of the seminars, people participated both in discussion as well as in writing down cases and comments on the emerging ideas in small groups.

The ideas were also developed together in six sessions with sixty regional stakeholder representatives who form the regional boards of the HEI. Finally, a closing seminar was held for the entire staff. Including all methods of participation, approximately 1,200 people participated. On average, a member of the staff participated two times in the project.

According to Knoke and Yang's (2008) classification, our analysis takes place on the realist strategy level of networks. We defined the HEI's network according to the informants' subjective perceptions of what is relevant in the network. We also employed snowballing to ensure relevant examples of regional development were covered. Hence, when an informant mentioned an example not already covered, we probed for names of knowledgeable persons relating to that example. These persons played a key role in reducing sampling bias. All interviewed informants were experts participating in regional development.

In the individual workshops, informants and facilitators drew maps of the key partners for each campus and discipline. Between the nodes representing the partners, lines were drawn to represent connection types and information flows between them. Of these information flows, the activities in which Laurea's staff participates were identified and classified. Working on similarities and differences in the practices, we developed examples and a visualisation of the key dimensions arising from the data. Preliminary versions of this model were presented in seminars and used as a basis for discussion.

The project produced vast amounts of data. Meeting minutes, written documentation, and workshop documents total several hundred pages of text. The research team coded all the data, cross-checked the coding, and identified the main types of interaction, which are reported in this paper. There is also a vast amount of other data relating to other practices, organisational issues, student perspectives, and possible future directions. These are, however, beside the focus of this article and omitted here.

6 Findings

The focus of the network analysis is on the interactions and the loci of the knowledge flows that form regional development as delivered by Laurea. The forms of regional development differ, largely due to differences between various disciplines. The autonomy of the campuses had also led to differences in what is offered to regional partners. However, despite the autonomous basis, we also found substantial similarities. Because of the pedagogical philosophy, close cooperation with regional partners was favoured in all education.

In striving for authenticity in learning, Laurea educators favour projects and learning tasks that bring together the genuine needs of the local businesses, industries and other partners and the learning requirements of the students. This emphasis seemed to lower the threshold of regional development, as the following exemplifies.

On multiple campuses, Laurea's business students studying marketing communications could take the unit as a 'business project'. The project would in effect be a marketing communications development project for a local organisation or business. The students, while studying the concepts and theory of marketing communications, would simultaneously make a plan for improving the partner organisation's advertising or sales techniques. Occasionally, the students would also do the implementation, such as producing a brochure for the partner, or designing and publishing a website.

The culture of partner-centricity and community engagement seemed to have facilitated finding new and novel forms of cooperation. A key feature of these cooperation forms is related to proximity or space of the learning and development activity. The campus is not the only location for activity - quite the contrary, it seemed most of Laurea's projects tend

to take the students and staff outside of the campus, to the locations of local partners. The key findings are discussed in Figure 2.

Figure 2 The spatiality of Laurea’s integrated learning and regional development activity

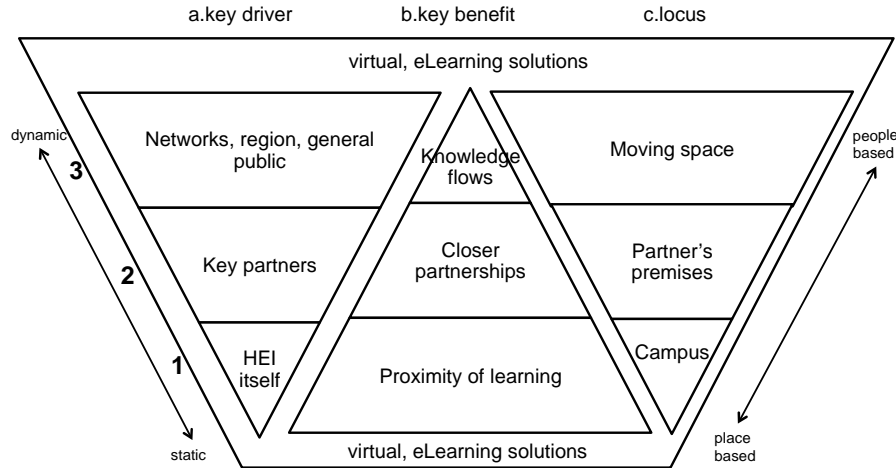


Figure 2 presents a summary of the main findings that arise from the classification. There are three key groups of findings and three levels in each of these groups that arise from the data. The first area relates to the key stakeholder, or the actor who is driving the activities in education and community engagement. This is represented by the triangle under heading a, and ranges from activity driven by the interests of the HEI itself (marked as level 1) to activities driven by a key partner’s interests (level 2) and to the interests of the entire region (level 3). This ties back to the positioning of the study: whether community outreach is seen as an external duty or as an integrated part of the purpose of the HEI. eLearning solutions, digital interfaces and online platforms were widely used on all levels either for supporting face-to-face learning or as standalone study systems.

The second key observation is the locus of the interaction. This is marked as the triangle c in the Figure. In level 1, interaction takes place in the campus. Level 2 takes to the partner’s premises, and on level 3, the activity is moveable and transferrable. The dimensions range from the place-based geography of level 1 to the nearly pure people-based geography of level 3.

Finally, the different interactions taking place in different locations and driven by different interests all have their own benefits. One is not ‘better’ than the other. The final triangle represents the key benefit of each of these interactions. This is represented by the triangle marked as b. The key benefit of campus-based learning is proximity and closeness. Learning and regional development actions are easier to coordinate, when all parties are at the same location. Activity taking place in the partner organisation’s premises helps build partner-centricity and ensures that the partner’s needs are served. Activity aimed at the general public and the entire region enables knowledge flows and information dispersion to larger audiences.

A finding is that a HEI needs to think spatially, asking where and when its resources are accessible. Accessibility is not limited to the physical location. Through spatially flexible learning/development solutions, a HEI can take its services to where the regional partners are. This dynamic interaction is the way in which functioning innovation systems are supported, and in which the Triple Helix of the HEI, industry and the government can share knowledge.

Moving from level 1 towards level 3, partner-centricity and authenticity of learning increase. The further students get into real-life projects in real venues, the more their learning represents authentic, real-world problems. Similarly, openness and place independence increase when moving away from campus-based learning and towards learning in the world of work. In extreme cases, students did most of their learning tasks within a partner organisation, and only occasionally visited the campus to report on their progress.

Some of the innovative examples of activity in the data took place on a key partner's premises. These were main partnership organisations for the HEI, such as key hospitals, business incubators, and select municipalities. To ensure close cooperation with the partner, Laurea had developed various solutions, all based on the idea of taking the HEI's services and operations inside the partner organisation.

We found nursing programs, where nearly all learning took place inside a hospital, business students working on projects on an incubator's premises, and various multidisciplinary teams working on a municipality's projects in tourism projects. The key to close cooperation mostly involved student projects, although lectures and problem solving sessions were also used. The teaching staff was sometimes present inside the partner organisation, but not all the time – tying back to the issue of time-based geography.

Business students formed small teams and worked inside a local business incubator organisation. They took tasks from the start-up owners as well as from the incubator organisation itself. Students had the opportunity to work hands-on with an entrepreneur taking her first steps in the business. The entrepreneur received support and information from the students, and an opportunity to use another pair of eyes on their business problems.

We found examples of highly dynamic and spatially flexible activity, which we have termed 'moving space'. There were multiple examples of this, such as seminar tours for beginning entrepreneurs, counselling desks inside shopping centres, and rehabilitation assistance stands inside health care centres, all arranged by the students. These share the common features of a road show, where all the associated materials and artefacts can be easily transported to another venue.

The moving space talks to the needs of various networks of small businesses, organisations, and individual citizens, and the entire region. Since it can be moved to where it can be easily reached, the moving space offers a lot of potential for accessibility. The moving space is used for ensuring broad service coverage – making the HEI's services available to all.

Physical therapy students organised a rehabilitation and counselling event inside a local health care centre. One theme day focused on osteoporosis. The students would counsel and educate the health care centre patients, particularly the elderly, on the prevention and care of osteoporosis. They gave lectures on vitamin D consumption and coached exercises on body balance.

Students in social services mobilised a counselling unit that was built in a makeshift space inside a local shopping mall. Supported by teachers and experts, students took shifts at the service desk. The service was open to everyone. Most of the customers wanted to talk about health, unemployment, or housing issues. Since customer service work is part of the curricula, the experiment supported learning very well. The customers gave very positive feedback. Most importantly, a customer's threshold for approaching a student seemed much lower than approaching a professional social service worker. During the first four months, students counselled 1,100 customers.

Interestingly, in many of the examples in the data, open access and open participation tended to increase when moving from level 1 towards level 3. Some of the level 3 examples featured knowledge-sharing communities where equal participants provide important input. The entrepreneurship seminar was arranged together with an entrepreneurship association, and the rehabilitation service was a joint project with a patient association. On level 2, openness was much more restricted. These examples tended to be of strategic, deep cooperation, where openness was not always a goal. Also, for learning inside the campus (level 1), openness tended to be much more restricted. Even though the work itself might not have contained confidential issues, information and learning tended to stay inside the HEI anyway.

Although examples of virtual learning and cooperation were present on all levels, the core of the regional impact tended to hover in the physical domain. Programs in eLearning, virtual meeting rooms, and online guidance materials, shows and presentations were abundant. However, the virtual aspect was mostly viewed as a supporting act that can help, but not replace physical presence.

7 Conclusions and recommendations

In this article, we have discussed the transition facing higher education. Although community engagement is common in most HE systems, there is a need for a higher level of involvement and closer integration of the regional task and the core of the HEI.

The recent discussions of the new roles of the HEI, knowledge economies, and the Triple Helix rely on an assumption of the HEI's knowledge capital being in the use of its region. Today, this is challenged as the innovation clusters are increasingly fuzzy and the regional boundaries less important. HEI's need to be able to adapt to an environment, where knowledge flows take priority over physical presences. Our case study offers one way of interacting with the region dynamically, through spatially flexible actions.

The results highlight HEI's need to approach their knowledge resources from a new perspective. Other studies are also pointing towards examples of educational institutions taking the role of regional innovators, regional developmental organisations, and business-like consultancies, as is apparent in, e.g., the regional activities of trailblazer public universities in the USA (Kenney and Mowery, 2014).

Our findings indicate that one way to achieve closer integration is through approaching the HEI's impact through the issue of spatiality. A HEI's impact should not be limited to the physical location-based access to the knowledge network. Approaching the HEI as a network of people-based access nodes can result in innovative activities that improve the depth of regional cooperation and integration with the HEI's core tasks.

The spatiality of a HEI implies a shift from a stable locational presence towards a more dynamic, flexible flows of knowledge in global innovation networks. Instead of viewing the educational offering in the light of institutional location, today's universities need to view their capabilities as based on certain activities and people. These activities and people are available at specific locations for finite periods of time.

As the case study suggests, a HEI can make itself more accessible to a large operating region through innovative choices in community outreach and cooperation. By taking learning out of the classroom, our case university has found a way for improving mobility and proximity and accessibility at the same time.

Improving the HEI's impact region requires either expanding physical presences, or taking a new angle to spatial accessibility. Like in the case organisation, this may result in movable, mobile, temporary, on-demand 'learning spaces'; spaces which also support co-creation, innovation, regional development, and multi-directed learning. The underlying idea is based on information flows, innovation networks and people-based access. Since regional impact and collaboration with local business and industries result from the actions of people, these movable components can be thought of as dynamic nodes in the knowledge network. Innovation networks consist of multiple intertwined actors. Perceiving these organisations as nodes in the knowledge network turns the map of a HEI's impact region into a dynamic collection of contact points, connections and switches.

From this perspective, the transition may not be as hard as it appears at the outset. Improving outreach is about taking the activities closer to the region. However, it is also about making the various accessibility options visible. A HEI's impact region is then also a function of communicating these various options.

HEIs are facing a transition where the boundaries of the operating region are no longer always clear and definite. The world consists of multiple local, global, and 'glocal' innovation networks that are constantly evolving. Higher education needs to support this shift by moving into more flexible, accessible and increasingly agile activity. We need to be actively present in the nodes of the knowledge networks. We need to be active in creating new nodes in the knowledge network. This is the only way to actively support the new spatiality of a HEI.

The age of instant access is characterised by a shift away from physical places, towards physical and virtual spaces, and where being 'connected' does no longer necessitate physical presence. In our findings, the connectedness takes predominantly a physical form. Although the virtual dimension is present in the data, it does not appear to differentiate between the spaces or the activities. This is a potential future direction: we would expect to find novel ways of integrating education, research, and regional development in shared virtual platforms, online spaces, or mobile applications. In the right places and spaces, online could offer substantial value for all actors in the regional network.

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