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UNIVERSITY-INDUSTRY COLLABORATION TO SUPPORT LIFELONG EDUCATION

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Abstract

Collaboration between the university and industry can contribute to generating a rich and relevant educational content. Furthermore, it can create a network of contacts with the surrounding community and future employers. Collaborating with an educational institute can also be a way of engaging in lifelong education and learning. This includes developing specific knowledge while training generic abilities, not least the ability of working collaboratively. There has come a movement in university-industry collaboration that involves a shift from (A) simple knowledge exchange to (B) the creation of shared frames of reference. This does not entail that problem-solving and knowledge dissemination should be set aside, but we observe that new dimensions have been added to the working methods that are already in play. Additionally, there is an increasing demand on higher education to provide lifelong learning, but how can this be done? The objective of this study is to explore innovative models of collaboration in continuous higher education. The paper is based on a qualitative case study method. Case study can be a way to explore unique cases, and in this particular paper, to explore new forms of collaboration as part of lifelong education. Considering the ongoing changes in university - industry collaboration, the question arose whether there are initiatives to collaborate in new ways in education to support lifelong education in working life. We started to search for new forms of education collaboration (in the national context of study). Since we looked for new forms, they were not to be found in data bases or previous literature. and we found that the most efficient method was to simply ask around in our networks. The criteria to include a case was: 1) that is was based on collaboration between university and working life, 2) the collaboration was aimed at higher education for professionals, 3) that the case exhibited a form of collaboration not identified elsewhere. When the cases were identified, we contacted the organizations for interviews with key informants. Based on the interviews, we constructed cases that described what they had done, what was unique and what we can learn from these cases. The interviewees got to approve the cases and make sure that the facts were correct. The main result from these cases is that it is industry and working life, not universities, that initiate collaboration to develop new models for lifelong education. Such collaborative efforts also hold a potential for the integration of research, education, and innovation. However, we need to: (i) develop robust models outlining how this can be achieved and (ii) clarify how the development of skills takes place. In our paper we draw the following conclusions:

- Proximity facilitates collaboration and regional initiatives are the appropriate level to reach a critical mass while remaining geographically close to collaborating businesses.
- Collaboration in higher education can be said to have undergone a cultural shift towards approaches that support active learning and a sense of responsibility in society.
- The educational innovation that we have identified through the case descriptions has taken place on the initiative of external actors who contacted the university institutions based on specific needs.

Keywords: Collaboration, higher education, lifelong learning, lifelong education, continuous education, innovation.

1 INTRODUCTION

Since the 1970s, the concept of 'life-long learning' has been repeatedly addressed in public debate. The core of this concept lies in seeing learning as a process which occurs throughout the life of a person and noting that this learning takes place in informal and formal contexts. It is to be understood as something that arises from, and is secured by, persons. When specifically addressing the provision of educational experiences, the concept 'lifelong education' is more relevant [1]. In recent years, lifelong education has prompted a demand for individuals to possess some form of higher education, especially amongst those individuals who wish to further their education during their working lives. The labour market's need for a qualified labour force in combination with high levels of educational attainment in the population results in a situation where universities and colleges are considered as possible providers of educational courses for adults who wish to further their education. This, in combination with other changes in society, means that higher education institutes are faced by new demands which need to be adapted to: "*Universities therefore need to transform their operating models, structures, processes, estates and facilities, and invent new technology solutions, new forms of people management and new partnerships, while retaining their focus on academic excellence.*" [2, p. 8]. These changes can include educational finance models, student expectations, new opportunities provided by technological developments, growing collaborative networks, and increased competition between educational institutes and other educational providers. One scenario is that higher education institutes will become important actors in a regional context. A study by the European University Association (EUA) has shown that, at an overarching level, a movement has emerged which sees higher education institutes as collaborative, co-creative actors which drive forward strategic development in partnership with other regional actors [2]. The EUA describes how these institutions have abandoned the idea that innovation is a linear process – where basic research leads to applied research which leads to the commercialisation of a product – and, instead, they operate as one of several partners in an innovation hub or cultural hub where people gather round questions of common interest. This cross-boundary manner of working is supported by new forms and practices of interaction. These new practices search for consensus with respect to social-, organisational-, and spatial dimensions, something which can be dealt with by working with a regional orientation. Transformative change takes place on several levels, but in many situations collaboration and innovation are equated with technical development or research. Taking note that the EUA has identified a shift towards the integration of activities and increased levels of cooperation between collaborative partners, it is with some interest that we examine the roll of education in this collaborative context. This interest is reinforced by the marked need for the provision (to the labour market) of lifelong education. Consequently, the aim of the present report is to investigate innovative ways of collaboration within higher education.

1.1 Proximity facilitates collaboration

This report presents a discussion of new ways in which we can engage in, and develop, collaboration with higher education institutes. But before we explore this properly, we examine, in this introductory section, the importance that proximity to a higher education institute has. The reason for this is because proximity to a higher education institute has a definite impact on a potential collaborative partner's opportunities to participate in collaborative projects, and thus this has consequences for individuals and for working-life. One reason for the interest in proximity is that there exist several examples of geographically-related clusters where certain growth-companies can be found: "*Following successes such as Silicon Valley in the United States, many regions in industrialized and emerging economies have been attempting to set up new clusters through industrial districts, technopoles, science parks, firm incubators and learning networks.*" [3, p. 67]. The collective and relational character of entrepreneurship is amplified by entering into a context where a multitude of opportunities to make contact with each other is on offer. The higher education institute's role in economic- and regional development is shaped in collaborative networks which are composed of interested parties who represent different business ideas and ways of working, and who have different goals with their participation in these networks. Various models have been developed to illustrate the complexity that exists in these networks. A common way to discuss these networks is to talk of Triple-, Quadruple-, or Quintuple helix models. These models include the collaboration between higher education institutes, industry, and authorities, and, in the more advanced models, even collaboration with civil society, the media, and the surrounding population. A review of the literature on Quadruple helix models reveals that research in this area is fragmented and there is a lack of a coherent framework that can be used to study these models [4]. The same studies do, however, highlight the fact that there has been a shift from (A) a perspective where a (one-sided) transfer of knowledge from the higher education institute to industry takes place, to (B) the insight that it is necessary to engage in open, collaborative processes where all interested parties are seen as active

participants. Such an interactive approach creates new challenges with respect to benefiting from these exchanges in the collaboration. For the higher education institute, this entails having oversight and implementing possible changes in the institutional culture, the working environment in different areas of the institution, and how the existing performance systems and support systems promote or restrict such collaboration [4]. In the call for further research which Miller et al. make, they mention concepts such as 'training' and 'knowledge transfer', but there is no apparent direct link to how educational programs can be included in this and developed as a natural part of the collaboration which can then be used to support the provision of competence in various ways.

The link between collaboration and geographical location is a common theme in several research studies. Fundamentally, it is easier for the relevant actors to come into contact and collaborate with each other if they are geographically close to each other. The fact that geographical proximity facilitates collaboration has real consequences, because collaboration, in turn, has a positive influence on a company's capacity for innovation, which may provide financial benefits in the future. Bengtsson has shown that, in educational collaborations, the flow of knowledge almost always moves to companies and organisations within the region and primarily to large companies who operate in the region, and somewhat less so to small- and medium-sized companies [5]. Large companies and small- and medium-sized companies take, furthermore, different directions with regards to their collaborative projects. For example, large companies focus on the early stages of the innovation process, whilst small- and medium-sized companies are more inclined to show interest in the latter stages of the innovation process [6]. Small- and medium-sized companies do not always view a local higher education institute as a possible collaborative partner, however [7]. In addition to geographical proximity, the choice of a collaborative partner is influenced by the degree of organisational similarity, previous experience of collaboration, and the quality of the research that is produced at the higher education institute [8]. Collaboration is often based on relationships between individuals working together, and these individuals' social network can also contribute to collaboration taking place across geographical borders. The educational background of the employees is also a factor which may determine which higher education institute a company may decide to work with [9]. This entails, amongst other things, that an engineer might prefer to collaborate with a technical college more so than with a college which specialises in different areas. In this context, it should also be noted that, for the sake of an institution's own innovative efforts, international exchange, in the form of institutional cooperation with institutes in different countries and in the form of students, teachers, and researchers from other countries is also of great importance [10].

Geographical proximity can also create a number of problems. For example, two or more institutions may find themselves in growing cities where they have to compete with each other for space. In such a case, collaboration may involve how they can, together, exist in an all the more densely-populated urban environment, and how they can create a climate where the institution and students are viewed as a resource for knowledge, instead of occupiers of an otherwise exploitable city landscape [11]. When an institution is already in a collaborative partnership with other interested parties, several issues may prevent new collaborative ventures being entered into. One analysis of researchers' views on collaboration resulted in the identification of six categories of forces that can be a hinder to collaboration. These include: (i) a lack of relevant competence; (ii) the importance of the collaboration; (iii) expectation and the evaluation of the collaboration; (iv) access to resources; (v) administrative systems; and (vi) values [12]. The conclusion was that, instead of merely supporting collaboration, it may be more effective to remove obstacles and hinders for collaboration. There exist certain tendencies in society to move from openness/transparency and cooperation to a situation where one locks oneself away behind closed doors. Even certain higher education institutes have begun to build barriers to collaboration, for example, by implementing a legal system which guards patent rights, and trademarks [13]. An increase in collaboration in higher education institutes can entail new and challenging legal risks. In such circumstances it is then necessary for the institution to deal with these legal risks, whilst not undermining the learning that takes place and the goals of its educational programs [14].

An active leadership is required for those institutions who aim to establish intellectual- and social transparency. In recent years, academic organisations have emphasised the importance of leadership and formal hierarchies; something which has created a division between administrative and academic personnel [15]. For the promotion of collaboration, a form of leadership which takes into account the social- and professional context which the institute also instantiates must also be in place. This includes finding a balance between administrative- and strategic focus, and a leadership which supports learning, education, and research [16]. There is also a demand for academic leadership which does not get bogged down in the fight between leadership and management, but rather, is prepared to proceed with

seeing how a practice-based leadership model can contribute to drive the institution forward [17]. This demands that the institution engage in flexible and meaningful forms of collaboration.

For the administrative staff, as well as those researchers and teachers who have not previously worked in a collaborative project, this often entails a change in perspective. To support an increased level of engagement with the surrounding society, the institution can explain and clarify the benefits associated with such collaboration – both with respect to those employed by the institution and the external collaborative partners – and subject the organisation's remuneration system and the allocation of resources to review [18]. This is relevant to the Swedish context because it is stated in the Higher Education Act that, in addition to the provision of education and the conducting of research, higher education institutions are tasked to collaborate with the surrounding community and inform these citizens about their operations. Higher education institutes are also tasked to ensure that the research results that are realised at the institution are benefited from. With respect to the dissemination of knowledge, this is to take place, partly on the institution's initiative, and, in part, by other institutions which have the dissemination of knowledge as their primary assignment. Research in collaboration with others is stimulated by support by certain research-financing organisations, and we also note that there exist research methods which are based on collaboration and interactivity. Concerning the provision of education in a collaborative context, it is usually decided upon by the individual higher education institute and the employees how this should take place.

1.2 Collaboration for improved education

Collaboration is a relatively common device which is used to provide students with good quality educational content. For example, within the field of healthcare, there exists a well-known tradition of alternating between academic study and clinical training. There are several areas within healthcare which demand collaboration if the student is to achieve the desired levels of knowledge and skills. This is true, not least, in the area of general medical practice where it is a fundamental principle that the student understands how the various medical fields support each other. To improve public health projects, the student can participate in educational courses which are informed by cross-disciplinary collaboration, which, in turn, will introduce change to the educational program's character, as well as the knowledge and skills which the student will acquire during his or her course of study. For example, at Berkley in California, the medical school has adopted to work with evidence-based practices, which takes place via field-studies and practical social projects [19]. The reason why this change took place was because their operations (including 'systematic innovation') were tasked to satisfy a social need ('sustainable implementation'). To support the students in their collaborative projects, the teachers cooperated with external actors with their teaching. Sandhu et al. stress the fact that this was a model that demanded significant resources to maintain and if this model is to be adopted by other institutions, then a budget must be in place to make this form of collaboration possible. If such a budget is not in place, then it is probable that the teachers will distribute the course content between themselves in such a way that collaboration will not be needed, because this would consume more time than would otherwise be available. At Harvard University, they have used nano-courses in an effort to offer participants knowledge in many different areas, so as to develop a holistic perspective in the participants [20]. Nano-courses are the realisation of a concept which is based on six hours of study, divided across two days. The first day is lecture-based and is open for everyone. This is intended to provide the participants with (i) the latest available information within a specific are or (ii) the foundations in a new area of study. The second day is discussion-based, where the students who have enrolled on the course attend with the purpose of receiving academic credit. This is also a way to offer knowledge which should facilitate collaboration. Another way to facilitate collaboration is found in educational courses which provide a general understanding of the different roles, expertise, and terminology that exist in a particular business where collaboration forms part of the students' assignment. This is a common practice in the world of school teacher training [21]. The opportunity to train with collaborative activities in virtual teams is also something with is increasingly asked for, because working methods which transcend time and space are seen as more and more desirable [22]. Collaboration where experts from different companies and organisations are invited to discuss issues with students can function as an additional teaching resource and as a way to include specialist areas in an educational course. This is something which takes place in the area of accountancy, where there is often a lack of academic teachers available to teach certain specialist areas [23, 24].

The ability to collaborate and create contacts between students and companies is often requested by the students themselves. This type of educational collaboration can occur during final thesis projects where a company or other organisation is involved in the student's work. To investigate the effects of this type of educational collaboration, a study was performed on the final thesis projects written during

2016 at Lund University [5]. The university departments which were included in the investigation were the School of Economics and Management, Lund University Faculty of Engineering, the Faculty of Social Sciences (Social Sciences faculty), and the Faculties of Humanities and Theology (Media and Communication). These departments were selected because they offer educational programs which prepare students for specific professions (civil engineer, economist, systems analyst, social worker, journalist, and communicator). The majority of the final thesis projects which were examined, 950 of approximately 1000 were written at the School of Economics and Management and at Lund University Faculty of Engineering, At the Faculty of Engineering, approximately two thirds of all final exam projects were written in collaboration with a company, whilst only one tenth of the final exam projects that were written at the School of Economics and Management and at the Faculty of Social Sciences were written in collaboration with an external company or organisation. For the year under investigation, no collaboration took place with any companies or organisations in the final exam theses produced in the department of Media and Communication. This can be explained in the light of the aims that each respective exam project is expected to fulfil. Only Lund University Faculty of Engineering includes a professionally-oriented aim in their exam criteria, whilst the other three faculties state that the aim of such work be 'the performance of a scientific investigation'. Collaboration in such final exam projects entails that the student receives knowledge about the professional roles that are performed in a specific field, and they can take a step forward in entering the labour market, either via direct job offers or by virtue of the fact that the final exam project is considered a merit by potential employers. Contact with future employers is important for students. There is also the possibility to connect research to areas where the educational institute and employers have in common [25]. The connection to a future labour market is central to educational collaboration, but it may also be of interest to examine collaboration between different forms of schools, so as to come to an understanding of how students actually enrol into higher education courses and programs; for example, to investigate who had previously studied vocational courses at school [26].

In addition to contributing to rich and relevant educational content and to the creation of contacts with society-at-large and with potential employers, collaboration can constitute a way in which the student can engage with others in the learning process. This entails moving away from temporarily addressing specific questions, to forming long-term partnerships which have 'mutual development' as a goal. In one investigation of the collaborative projects with the surrounding population at one educational institute in Australia, the researchers found that the partnerships had lasted for between 5 to 20 years [18]. The goal of a network can transcend one individual organisation's interests, as exemplified in the National Network for Educational Renewal in the USA, where their aim is stated that partners in the network should search for, share, and act together, based on knowledge and education for democracy [27]. One feature of a democratic society is the work done on questions which address social justice; something with is currently relevant as suggested by the UN's global goals for sustainable development. Networks for learning in collaboration can either completely or partially respond to these goals by investigating how partners who collaborate with each other can contribute to an opening up of organisational boards which sometimes exclude certain individuals. At a higher education institution, this may involve coming to an understanding of why certain population groups do not enrol into higher education or an examination of the different types of student support that is offered at different institutions [28]. Long-term collaboration can have common goals which may well change over time. However, central to this is the development and agreements made with respect to the practical work that is done in networks for learning. Hibbert and colleagues identify two different general projects for learning in networks:

A. Instrumental project. This type of collaborative project involves the search for knowledge which can be used to solve a problem.
B. Curiosity-driven dialogue. This type of collaborative project assumes that the participating individuals will develop over time. [29]

Problem-solving is an important driving force, especially for companies, and it is not surprising that there is a need for, and an interest in, this type of collaborative project. In fact, we believe that, in practice, there is often a mixture of the two types of collaborative project; where the more problem-oriented purpose of the initial collaboration may contain elements of a curiosity-driven dialogue. One reason for this may be that many collaborative projects contain elements of research, and the research process is fundamentally driven by curiosity. There are however examples of when education is included in the equation. A study of Stanford University and the University of California at Berkley identified the factors which enables world-leading teaching practices, research, and their social relevance to exist within the same institution [30]. They found that the following factors enabled the institution to attract the best students and produce valuable inputs into social development: (i) a clear connection between research and education; (ii) great importance is given to education and teaching; (iii) recruitment methods; and

(iv) career pathways. The potential existing in collaboration to come to understand and participate in social development is promising, and we wish to emphasise that the development of new models which combine research and teaching in collaborative projects is an exciting pathway to the future.

In summary, we can state that there are not currently many examples of innovative educational collaborations to be found in the research literature. There exists studies of collaboration with industry which are directed at improving the education that is provided by an institution, but we would also like to see more studies on how education can become part of an on-going collaborative project or studies of new, innovative ways to meet with others who share the purpose of both developing/improving educational courses and programs and developing the participating company/organisation. In the following section, we present a number of case studies which may inspire the reader to think about how education, in collaboration with other parties, can contribute to professional development.

2   METHODOLOGY: EXPLORATORY CASE STUDY

To explore new forms of collaboration as part of lifelong education, qualitative case study method is a suitable approach. Case study method enables a close examination of data within a specific context. Zaidah Zainal states that case studies "*explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships.*" [31, p. 1-2]. In a study that explored the use of case study as a link between teaching and research, the case study could be a way to elaborate on research to boost teaching practices, but pedagogical cases studies were also used to enrich scholarly research [32]. The study identified five categories for case study usage in teaching and/or research. This clarifies how individual academics can explore and explicate the approaches relevant to the specializations of their institutions, and how to design case material to link different dimensions to better meet the publication requirements related to their research and teaching institutional objectives. To this, we would like to add the dimension of collaboration and the use of case study approaches to strengthen connections between universities and organizations/society. The case studies in this paper have the primary objective to present new and innovative forms of collaboration in higher education. We make links to the research community by looking at studies of what other have done, but at the same time, build the cases as narratives that can be used in different ways in education as well as to present them as examples for organizations that are looking for ways to connect to higher education as an opportunity for lifelong education.

Considering the ongoing changes in university - industry collaboration, the question arose whether there are initiatives to collaborate in new ways in education to support lifelong education in working life. We started to search for new forms of education collaboration (in Sweden, the national context of study). Since we looked for new forms, they were not to be found in data bases or previous literature. and we found that the most efficient method was to simply ask around in our networks. The criteria to include a case was: 1) that is was based on collaboration between university and working life, 2) the collaboration was aimed at higher education for professionals, 3) that the case exhibited a form of collaboration not identified elsewhere. When the cases were identified, we contacted the organizations for interviews with key informants. Based on the interviews, we constructed cases that described what they had done, what was unique and what we can learn from these cases. The interviewees got to approve the cases and make sure that the facts were correct. Due to the lengths of the case descriptions, this paper only provides a summary of the five cases.

3   RESULTS

In order to explore innovative ways of collaborating in education, we found five cases that where illustrations of connections between higher education and another organization. Because we were looking for new ways to work with collaboration in higher education, we have not taken examples from that are common at many universities. For example, it is common for working life representatives to be invited as guest speakers at university institutions, that students have contact with working life when they write essays or that higher education institutions provide commissioned education. Our focus, instead, was to find examples of unique initiatives of collaboration in both the private and public sector. Table 1 summarizes the five case descriptions based on the problem that existed, how they solved it and what was unique. By unique we mean that it is not necessarily the only example of a way of working, there might be other initiatives similar to the ones described in this paper, but still, they represent new or different way of working with collaboration for lifelong education.

Table 1. A summary of five cases involving innovative educational collaboration.

Collaboration initiative	What was the problem?	What was done?	What was unique to the collaboration?
Campus without a higher education institution	In Västervik there was a need for tertiary education within certain subject areas, but the location was too small to justify the construction of their own higher education institute.	They formed a campus, in collaboration with the county council and different higher education institutes could offer the educational programs which were in demand.	In part, the fact that there was a campus but no physical higher education institute present, and, in part, the fact that the educational programs were provided to full-time students (at a 100% study pace).
Industry as an educational partner	There was a lack of staff with certain competencies in the metal casting industry.	A long-term collaborative project with a regional university college which resulted in the provision of an educational program for all levels within the metal casting profession.	The combination of clarity with respect to the industry's needs and insight into the institution's driving forces.
A municipal authority provides tertiary education	There existed a need which was covered by an existing tertiary-level course but the university was not able to provide the course at such short notice.	The municipal authority assumed responsibility over the delivery of the course according the higher education institute's syllabus and course plan. The participants were later examined by the higher education institute.	The delivery of a course was moved from the university to the organisation where the need existed.
A course designed by industry for a technical college	Graduates possessed insufficient real work competence.	Included 5 to 7 weeks of work experience/practice at the employer's company as a part of the educational program.	This was introduced as an obligatory module in a program at a technical college.
A social service centre started an educational unit	There was a lack of financial control over what monies were being spent on professional development and within which areas.	Established an educational unit which provided educational courses within strategically-prioritised areas.	Entailed a division between the HR unit and a (new) educational unit so as to increase focus on professional development.

4   CONCLUSIONS

There exists a shift towards more collaboration and collaborative initiatives, where research, development, and education overlap with each other to even greater degrees. This state of affairs creates opportunities for us to respond to the needs for professional development and life-long education that are being expressed in the workplace. Instead of collaboration being an individual institution's or an individual actor's responsibility and assignment, it is becoming more common to see mutual initiatives where the participants wish to solve different problems but also engage in learning networks, in the long term. In such a context, educational collaboration does not merely involve how the students or the institution can be supported in their efforts by means of collaboration, but it also includes ways and means by which employees can develop professionally in collaborative projects. These observations are in agreement with international ideas where it is argued that the integration of research, education, and innovation is something quite desirable. The intention is not only to disseminate or develop factual knowledge, but also to broaden our repertoire of generic competencies, including collaboration,

communication, critical thinking, problem-solving, and the implementation of change [33]. The ability to collaborate thus becomes a highly sought-after ability.

The relevant research literature informs us that geographical proximity is important and that regional associations can instantiate powerful arenas where collaboration can take place. The literature on collaboration in higher education, however, is biased towards collaboration that supports the institution's educational programs; frequently, by providing the students with a link to real-life work and skills which are in demand at the workplace. Somewhat less is written about exploring new ways of collaborating via education. This may depend on the fact that there is a certain delay in the publication of such research since it takes some time for researchers to publish their work in scientific journals. It is for this reason we have included a number of case descriptions of collaborative initiatives in this paper, which can demonstrate how people working together can move forward. The case descriptions were selected with the purpose of illustrating unique ways of working and initiatives, i.e. these are methods of working which are not standardised in any way. If, despite their uniqueness, we are to draw any conclusions from them, we note that the driving force for each of these initiatives has come from working-life, both from the public sector and from private enterprises, and not from the higher education institute itself. These initiatives are responses to challenges which exist in organisations, where one has seen education as a key issue. Excluding the course designed by industry for a technical college (which is obviously one way to reinforce the connection to the work-place for all educational courses and programs at a technical college), we note that, in the other four initiatives, there existed individuals who were committed to educational issues. In several cases, these individuals already had a relationship with (or at least a great deal of knowledge about) higher education institutions. This may explain why they took the initiative that they did, thereby going beyond traditional ways of collaboration. In the case of the social services, even though a number of researchers had followed their journey of improvement, and that a certain number of courses are offered by the higher education institute, it is the case that increased knowledge of the organisation's need for competence has caused then to adopt a more diversified view with respect to who is suitable for the provision of different types of educational content, whilst providing education to many recipients within one's own domain/framework of reference.

Despite the fact that there is great pressure on higher education institutions to implement change, and despite the fact that they are continually working to develop their organisations, there seems to exist a certain institutional inertia in these organisations, which is both a strength and a weakness. Drejer and Østergaard have demonstrated that it is usual for collaboration to take place with people who have a similar educational background [8]. This is the subject of increasing discussion; how a person who is in an academic organisation can move across to inter-disciplinary and multi-disciplinary contexts. Given that people are, in fact, traversing these borders, the future will ask us how class distinctions can be broken down so as to facilitate collaboration with different types of people and institutions in society. For the higher education institute which wants to be part of a collaborative initiative in society, it may be germane for such an institute to consider whether the collaboration be evaluated in terms of merit and, if so, how this might be realised. In one review of the regulatory documents used at nine Swedish higher education institutions, one is confronted with a somewhat rigid view of collaboration, where the mantra "collaboration with the surrounding community" is stated, but not further developed [34]. One might also ask whether this change in thinking (that has crept into academic organisations) has led institutions to imitate certain ideas from industry, and whether it constitutes an obstacle to collaboration [35]. But perhaps it is not just the higher education institution that is to be confronted by changes in perspective if one wishes to integrate research, development, and education in a collaborative project. Taking the rhetoric concerning the notion that a higher education institute must benefit society, it sometimes appears that our universities and colleges should humbly stand, cap in hand, and be a servile partner in a collaborative project, irrespective of what the institution might benefit from the collaboration. If a collaborative project is to create a sense of commitment and function in the long-term, then it is crucial that each and every participating party sees the potential for development in the shared project. We conclude this report with the following remarks:

- In the section on whether geographical proximity facilitates collaboration, it is clear that regional initiatives are a suitable level to ensure a sufficient size (critical mass) for the project whilst still enjoying proximity to the partner organisations/institutions.
- In the section on collaboration in higher education, it is apparent that a cultural shift is taking place towards initiatives which support active learning.
- In the case descriptions, we highlight the observation that it seems that educational innovation is taking place in response to initiatives made by external actors who contact higher education institutions because they have real needs that they wish to fulfil.

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