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Vesa Harmaakorpi, Päivi Myllykangas
and Pentti Rauhala

Evaluation Report for Research, Development and Innovation Activities

Vesa Harmaakorpi, Päivi Myllykangas
and Pentti Rauhala

Evaluation Report for Research, Development and Innovation Activities

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FOREWORD

Research and development has been one of the most significant areas of development at Seinäjoki University of Applied Sciences (UAS) throughout its entire existence. Twenty years ago, the level of research and development in South Ostrobothnia was rather modest. The situation has changed because not only has the UAS as an institution developed, but also much has been invested in the activities EPANET higher education network and in the research and development infrastructure in Seinäjoki and the surrounding region.

Research and development became a statutory part of the activities in universities of applied sciences in 2003, but research, development and innovation (RDI) is still in the process of finding its form in the different UASs, in different operations environments. The evaluation of these activities is an important part of the present phase of development.

In 2009, Seinäjoki UAS initiated an evaluation of RDI activities, the purpose of which was to evaluate the objectives and operational processes of those activities. In addition, the purpose was to create a vision of the future opportunities of the institution as a part of the realm of research and development in South Ostrobothnia. The changing structure of the UAS not only creates opportunities for this, but it also poses challenges.

The independent evaluation of the research, development and innovation activities carried out at Seinäjoki UAS is discussed in detail in the present report. A group of experts led by Professor Vesa Harmaakorpi has compiled the report, and it provides those interested with information concerning the present state of RDI at Seinäjoki UAS. Furthermore, it provides an interesting statement with respect to the role of Universities of Applied Sciences as actors in the field of innovation.

Seinäjoki, 9 April 2010

Tapio Varmola
President

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ABSTRACT

Harmaakorpi Vesa, Myllykangas Päivi & Rauhala Pentti. 2010. The Evaluation Report of SeAMK Research, Development and Innovation activities. Publications of Seinäjoki University of Applied Sciences B: Reports, 50

An evaluation of SeAMK research, development and innovation activities was carried out by an independent evaluation group in February 2010. The independent evaluation group consisted of three members: Professor Vesa Harmaakorpi (Lappeenranta University of Technology), Regional Manager Päivi Myllykangas (Confederation of Finnish Industries EK) and President Pentti Rauhala (Laurea University of Applied Sciences). The evaluation of research, development and innovation activities in a Finnish UAS is the first of its kind.

The aim of the evaluation was to find out Seinäjoki UAS's strengths and prospects in the field of RDI. Strategic aims, organisation, the course of action and the results of RDI were the main targets of the evaluation. Special expectations were set down for getting perspective on Seinäjoki UAS's role as a part of the innovation system and how Seinäjoki UAS improves the know-how and welfare of the region. The evaluation group also made some proposals for developing the RDI activities further.

The evaluation report indicates that Seinäjoki UAS should take a strong role both in internationalization and enhancement of the innovation system in the region. The report regards regional higher education centre as a good way of offering RDI and educational services for companies and organisations in the region. The evaluation report also brings forth that there are many possibilities for Seinäjoki UAS to develop experience-based (DUI-mode) innovations.

Keywords: evaluation, RDI, UAS

INTRODUCTION

In recent years, discussion in Finland pertaining to innovation has taken on significantly new forms. At present, innovation and the product development associated with it is understood in a rather broad perspective. Discussion has evolved into the discernment of two content areas in innovation policy: science-oriented innovation policy and practice-oriented innovation policy (Harmaakorpi & Melkas, 2008). Both of these areas have been proven to be equally important.

Previously, innovation policy has been considered a science-oriented activity, which complies with the science, technology and innovation (STI) model, a model with solid investments in science. The logic of it differs significantly from the practice-oriented doing, using and interacting (DUI) model now at the forefront of discussion. The models' areas of focus are described in Table 1.

Table 1. Science-oriented and practice-oriented areas of focus in innovation.

Perspective	Science-oriented innovation	Practice-oriented innovation
Logic	Centralisation – Clusters – Benefits of mass production	Intertwined complexity – Innovation platforms – Middle size economics
Desirable innovations	Radical innovations	Incremental innovations
Source of innovation	Expert- and science-oriented	Customer-oriented and practice-oriented
Competence	World-class scientific competence in the focus areas	Brokerage – general ability to create possible worlds
Creation of an innovation environment	Creation of science centres in the top, world-class areas	Development of the ability to innovate in the working life
Transfer of information and knowledge	Transfer of the knowledge and technology developed in science centres to enterprises	Technology and market signal scanning and absorption into enterprises
Information production logic	Homogeneous information production	Heterogeneous information production
Target enterprises	Large enterprises	Small and mid-sized enterprises, public sector
Institutions of higher education	Universities	Universities of applied sciences

The fact that innovation and product development have previously been considered merely science-oriented activities has been rather problematic for universities of applied sciences. Universities of applied sciences have been expected to function as part of the innovation system in Finland, but their role has remained vague in part, because the resources allotted to them for science-oriented innovation activities have been meagre. As new innovation policy takes shape, it can be expected that universities of applied sciences will establish their role as significant actors in practice-oriented innovation activities.

The practice-oriented innovation framework is rather new in Finland, and it has not been applied very widely in universities of applied sciences. However, the evaluation group decided that its goal would be to compare the activities at Seinäjoki UAS (Seinäjoki UAS) particularly from the viewpoint of practice-oriented innovation where, for example, the logic of information production and substance of competence significantly differ from the corresponding logic and substance of science-oriented innovation (Mutanen, Siitonen and Halonen, 2008). It is a question of progressive evaluation; more regard is given to the current discussion about innovation policy rather than looking at what it has been. For this reason, the focus in the present evaluation report is on future-oriented proposals for development.

RESEARCH AND DEVELOPMENT AT SEINÄJOKI UAS

University of Applied Sciences' research, development and innovation activities (RDI) endeavours to produce practical applications for practical use. The concept refers to the development of methods, applications, models and programmes. All of the faculties at Seinäjoki UAS engage in RDI activities. The activities are concentrated around predefined areas of emphasis based on the expertise in the faculty and the needs of the residents in the region.

At Seinäjoki UAS, RDI activities are integrated into teaching through various types of platforms. For example, the *Projektipaja* workshop and the *Agro Living* and *Habitcentre Living Labs* (http://www.agrotechnology.fi/esittely_agro_living_lab.html), which engage in user-centred designing and the development of assessment methods, offer students the opportunity to carry out development projects for companies.

Projects

RDI activities at Seinäjoki University of Applied Sciences comprise projects and services. The institution participates in projects as an expert in applied research. The projects are often research and development projects carried out together with several different partners. International projects are also on the rise. Students may participate in the projects through their chosen study modules.

The theses carried out by the students at Seinäjoki UAS each year form a significant part of the research and development activities in the institution. Project-related theses provide students with solid experience of life in the working world. Moreover, projects often open doors to places of employment.

Services

Seinäjoki UAS's expertise is developed into products and offered to customers as market-priced services. Project may give way to new ideas for services, and services may generate new ideas for projects. In this way, projects and services support each other. Chargeable training, research and development services are innovated primarily in the faculties. For example, the Business School offers market research and company services, the School of Technology laboratory and testing services and the School of Social Welfare and Healthcare offers evaluation, consultation and training services.

The Provincial Institution of Higher Education fortifies research and development activities in the Lake District and Kauhava. The Seinäjoki UAS Research and

Development Services department sells and markets the expertise in the areas of education offered at the institution to companies and other organisations. The aim of the department is to increase the visibility of the expertise at Seinäjoki UAS and facilitate contact between organisations in the region and Seinäjoki University of Applied Sciences.

EVALUATION PROCESS

The research, development and innovation evaluation at Seinäjoki UAS comprises self-evaluation of RDI activities and an evaluation by an independent party. The self-evaluation was commissioned by the Research and Development Services department and supervised by Research Director Hannu Haapala. The essential material for the self-evaluation was gathered once the independent evaluation group had approved the structure of the self-evaluation report. A SWOT analysis was made based on the draft; participants in the analysis included the co-ordinators for project and services activities from Seinäjoki UAS's different faculties and the provincial university. The opinions of the representatives of the faculties regarding the strengths, weaknesses, opportunities and risks of Seinäjoki UAS's RDI activities were compiled in the SWOT analysis, which was attached to the draft of the self-evaluation report. The draft was then sent to Seinäjoki UAS's faculties and the provincial university for commenting.

The evaluation process and the information gathered in the self-evaluation were discussed in Seinäjoki UAS's RDI seminar. Focus in the seminar was given to the opinions of the faculty representatives concerning the weaknesses in Seinäjoki UAS's RDI activities, and possible measures were discussed to eliminate those weaknesses. The self-evaluation report was then revised and supplemented and sent to the independent evaluation group for commenting. The self-evaluation was revised based on the feedback, especially on the part of the external influence of Seinäjoki UAS's RDI activities. At this stage the staff working in the Research and Development Services department carried out their own SWOT analysis.

The president of Seinäjoki UAS nominated the independent evaluation group, which carried out an independent evaluation based on the self-evaluation, interviews and material the group had obtained. Members of the independent evaluation group included Professor Vesa Harmaakorpi of the Lappeenranta University of Technology (chairperson of the group), Regional Director Päivi Myllykangas of the Confederation of Finnish Industries EK and President Pentti Rauhala of the Laurea UAS.

The evaluation group examined the self-evaluation report and other material and made a two-day visit to Seinäjoki UAS. During the visit, the group became familiar with the demonstrations presented and interviewed Seinäjoki UAS's internal and external interest groups. Both the material and the organisation of the visit were given a grade of excellent. The work of the evaluation group with regard to these areas was made as easy as possible. The evaluation group is especially grateful for the SWOT analyses for the self-evaluation report; they provided an excellent foundation for the evaluation work.

Research, development and innovation and the UAS strategy

The research and development strategy 2008–2010 at Seinäjoki UAS was approved on 28 March 2008. The strategic volition in the RDI activities is to be number one on the national level, while at the same time strive to increase regional influence and develop the regional structure of competence. Strategic sub-goals include correlating RDI activities more closely with the working life, utilising extensive collaboration networks in projects and services, making RDI an integral part of teaching and thesis work and doubling the volume of RDI activities by the year 2010.

The goal is to profile activities according to the needs of the region and clients through top expertise in which the essential factors representing competence on the international level are distinguished from the essential factors representing competence on the national level. These essential factors include entrepreneurship and management of small and mid-sized enterprises, development of wellness technology and services and the optimisation of production operations. Essential areas include business competence, user-driven product development, social welfare and health care services and work procedures, intelligent technology applications, agro-technology and food processing industry and technology. Seinäjoki UAS' vision for 2015 is to be a successful, international and entrepreneurial spirited institution of higher education. The central role of RDI activities in the UAS's strategy is proof of the choice of RDI as one of the two main processes in the institution.

According to 2008 statistics, the volume of RDI at Seinäjoki UAS ranked 13th largest among universities of applied sciences in the country when measured by the amount of research funds, and 12th largest when measured by research working years. With regard to the proportion of students, Seinäjoki UAS's volume of RDI was a little over the average for the country (€695/student, the average being €632/student), ranking 11th. Therefore, the volume of RDI at Seinäjoki UAS cannot be considered as one of the best in the country at the baseline of the strategy; rather, it is closer to the average for universities of applied sciences. The proportion of external funding in the costs of RDI has been greater than the average for all UASs in the country throughout the entire 2000s, but in 2008 it was at the average for the entire country (56.1 % in 2008, average for universities of applied sciences: 57.8 %). This also indicates that the service orientation of the RDI activities mentioned in the strategy has been rather strong at least in the baseline situation. There was a 40 % increase in volume between 2007 and 2009, which does not yet make it possible to double the volume between 2008 and 2010. However, it does indeed indicate stronger growth than the average for the country's universities of applied sciences in the 2000s.

The strategic goal is ambitious but well founded from the perspective of the entire scope of goals set for the UAS. In 2008, the RDI volume for universities of applied sciences dropped in the entire country by 23 % from the previous year due to a delay in the initiation of the EU Structural Fund period. The drop was somewhat lower for Seinäjoki UAS (21 %). As in other institutions, the decrease in Seinäjoki UAS pertained expressly to EU-funded RDI activities, which was compensated by a significant increase of as much as 81 % in self-financing. During the years 2005–2007, the proportion of external and self-financing did not change very much; it was roughly 75 % (external) and 25 % (self-financed). As of 2009, the financing structure will most likely be restored closer to the level of earlier in the 2000s.

Evidence of regional influence is depicted in the regional influence study carried out by Taloustutkimus in 2009. According to the study, Seinäjoki UAS was the second most prominent organisation offering research and development services after the Centre for Development, Transport and the Environment, consequently surpassing academic universities, for example. The same study also revealed that Seinäjoki UAS's strengths lie in localness and knowledge of local business life. It was considered a regional developer and creator of a skilled labour force. The interviews during the evaluation also revealed that Seinäjoki UAS is one of the region's best actors with regard to projects. Hence, the foundation and results for increasing regional influence and for developing structural competence in the region are favourable.

Carrying out projects in the crosscutting and focal areas is, in part, open to interpretations. According to a summary drawn up by the UAS, 80–90 % of the funding for RDI activities was directed to the crosscutting and focal areas. If one considers the projects chosen for the self-evaluation by the faculties in the UAS, a rather contradictory viewpoint arises. The self-evaluation report contains descriptions of 12 projects and service projects, four of which are clearly associated with the crosscutting or focal areas. Five of the projects must be considered above all as consultative further education. The projects carried out in the School of Technology best corresponded to the crosscutting and focal areas. One of the projects presented in the report involved international collaboration. The evaluation revealed that international collaboration is still not a significant part of the RDI activities in the UAS.

The crosscutting and focal areas are the same as those suggested by Administrator Kari Neilimo in his higher-education model for South Ostrobothnia. They are, however, quite broad and should be defined in more detail. One in three of the goals in the 2015 vision for higher education entails the concept of entrepreneurial spirit.

RDI activities associated with entrepreneurship seem rather competitive and also involve international publishing. The stronger emphasis on it as a crosscutting area could be well founded when considering the special characteristics of the region. A facile division of duties in this area with actors in academic universities would support the further strengthening of the role of the UAS. The promotion of entrepreneurship and the research associated with it coincide well with the role of the UAS as promoter of small and mid-sized enterprises. Seinäjoki UAS possesses significant evidence of research and promotion of entrepreneurship, which encompasses international research work, the Yritystalli project that promotes entrepreneurship among students and the promotion of the transfer of ownership in a rewarding way.

The regional institution of higher education in the Lake District (Järvisseudun maakuntakorkeakoulu) is a demonstrative example of the regional development carried out by universities of applied sciences. As distinct from other regional institutions of higher education in the country, the Lake District regional institution of higher education is not merely a distribution channel for adult education; rather, it also renders UAS RDI services outside the central city in the form of student theses, for example.

Proposals for development

Strengthening the selected crosscutting and focal areas well substantiates the goals for structural development set forth by the Ministry of Education and Culture, but it calls for a more selective project policy and more closely defined fields aiming for top positions on the national and international levels. It would be natural to direct RDI activities in three main areas, one of which would be the research activities in the crosscutting areas currently on the rise on the international level. The second area would be competence-based RDI based on the needs of the region, and the third area would be development and service activities that more readily serve the needs of enterprises. This could be worthwhile in the short term from the viewpoint of the overall strategic goals at the expense of volume- and economic-based goals, and could, in the long run, enable the more extensive utilisation of competitive research funding (e.g. the Finnish Funding Agency for Technology and Innovation, TEKES).

The massive drop in EU-funded RDI activities for not only Seinäjoki UAS, but for the universities of applied sciences in the entire country, calls for a significant increase in TEKES funding, EU framework programme funding and other competitive funding if the volume of RDI is to be maintained. Moreover, the development of

the crosscutting areas should be funded by reallocating resources, which can be made possible by strengthening the integration of learning and RDI activities.

Organisation and sub-processes of research, development and innovation

Seinäjoki UAS has engaged in RDI activities since the mid-1990s. During that time, RDI was divided into two separate units: commerce and technology and social welfare and health care. The units' dissociation with teaching proved to be too much and they were merged together with the academic faculties. During the 2007–2008 academic year, Seinäjoki UAS reorganised its RDI activities into one performance area, which is led by a research director. The activities in the performance area are supervised by a steering committee appointed by the UAS's Board. The RDI performance area is divided into two sectors: projects and services. The RDI activities have been assigned to the UAS faculties where there is one co-ordinator for each sector. The faculties include School of Culture and Design, Business School, School of Technology, School of Agriculture and Forestry and the School of Social Welfare and Health Care. In addition, Seinäjoki UAS's RDI activities are associated with the SC-Research unit in Lapua and the Lake District regional institution of higher education.

RDI activities are co-ordinated and supervised in Seinäjoki at a centralised RDI organisation, the RDI service point, led by the research director. A research manager supervises project activities, and a service manager supervises service activities. The activities between the sectors are divided such that the best competence created in the projects is developed into market-price services and in turn ideas are obtained for project activities through the needs as perceived by the services. Endeavours have been made to link the project and service activities to teaching.

The organisation of the RDI activities at Seinäjoki UAS is described in the self-evaluation report with a matrix. The faculties' conventions as regards RDI activities are regulated and standardised. The support services for RDI activities are carried out as efficiently and cost-effectively as possible. As RDI is considered an integral part of teaching, teachers may also consider RDI activities in their planning. The matrix-type organisation offers suitable flexibility for RDI activities. The interviews revealed that authority and responsibility in a matrix-type organisation should be clearly defined to avoid excessive hierarchical levels and an overly large

organisation in RDI activities. Not only may excess organisation pose challenges for a matrix-type organisation, but also increased co-ordination and meetings. When the distribution of authority and responsibility is clear, the structure of the staff yields according to the activities, and inconsistent practices in RDI can be avoided.

The RDI sub-processes, projects and services, are sectors that should function seamlessly together. Efforts in the projects are geared toward developing market-priced products that are in accordance with the principle of open competition. Good practices achieved through project activities include *Projetipaja* and *Yritystalli*, which are innovative conventions for integrating RDI into teaching. Practices proven to be plausible should be further developed and introduced not only within Seinäjoki UAS but outside of the institution as well. Competence in the service process calls for a different type of competence than that which has been required in teaching or in projects. Understanding the needs of a customer requires close collaboration with the customer.

Proposals for development

The organisation of RDI activities at Seinäjoki UAS corresponds in general to the notion the Ministry of Education and Culture has set forth in its own reports (Research and Development in Finnish Polytechnics 2004). A new type of organisation is well under way, and the staff should continue participating in the improvement of RDI organisation. The challenges to the leadership of a matrix-type organisation mentioned above must be given special attention in subsequent development. To clarify the organisation of RDI activities and to increase the influence of RDI, it will be integrated more closely into teaching. With respect to influence, integration on all levels is vital. In addition to the closer integration of RDI into teaching, attention should also be given to the collaboration between Seinäjoki UAS's faculties and the development of and increase in the integration of the sub-processes involved in projects and services. For example, social media solutions promote the openness of different courses of action and a culture of working together. To achieve all of this requires the systematic development of the competence of Seinäjoki UAS's staff and up-to-date support services.

Conventions of research, development and innovation

The duty of the UAS is to engage in applied research and development work, which serves teaching, supports the working life and regional development and

considers the structure of business in the region (Act 351/2003, Amend. 564/2009). RDI activities are constructed according to the needs and strengths of the region with emphasis on the working life and enterprise. Seinäjoki UAS has defined three crosscutting areas and seven focal areas for RDI activities, which are founded upon the higher-education strategy. The crosscutting areas have been defined from the customer's point of view; they are not merely independent fields but more extensive entities of competence. The crosscutting areas (Entrepreneurship and SME management, development of welfare technologies and services and optimisation of production systems) are assumed to represent international-level competence in the near future. The focal areas (business competence, user-centred RDI, services and working methods in health care and social work, applications of intelligent technologies, experience production, agro technology, food production and technology) represent national-level competence.

Seinäjoki UAS's crosscutting and focal areas are congruous with Neilimo's definitions. They are entities of competence arising from the needs of customers in the region, and they serve the central lines of business in South Ostrobothnia as well as the more internationally competitive lines of business across professions. In accordance with the Polytechnics Act, Seinäjoki UAS has focused on RDI activities that support the working life and regional development and take into account the structure of the region's business. This can be seen in the issues that are involved in projects associated with transfers of ownership in SMEs. Seinäjoki UAS is also involved in many national RDI networks, which assist in acquiring information and distributing good practices to various parties. Innovation activities endeavour to create influential centres of expertise in the regions. The interviews indicated that Seinäjoki UAS is seen as an essential foundation in the co-ordination, creation and development of the region's RDI activities, because innovation activities in South Ostrobothnia have been divided between several actors. The interviews revealed a concern for the overlapping of RDI activities among different actors and dispersing of resources.

In RDI-related activities, customers are encountered when selling projects and services or when they contact the institution personally. The interviewees stated that although Seinäjoki UAS is, for the most part, a familiar partner and skilled in carrying out projects, the process of encountering customers and selling services are areas that need clarifying. In situations where a customer may need multi-professional competence, for example from several faculties, the responsibility for contacting the different faculties is placed on the customer. The region possesses social capital through its sense of community and close relationships with partners in collaboration. This distinctive feature should be utilised in RDI activities to create

closer relationships with customers. Living Lab models provide a mutual platform for working with customers. The organisation model at the Lake District regional institution of higher education is also one that can be applied more extensively in RDI. In this model, collaboration has been developed in the way required by universities of applied sciences, and it is suitable for tertiary institutions as well. Seinäjoki UAS endeavours to operate in an entrepreneurial way, although it does not always seem to suit the traditional notion of how an educational institution should function. However, the principle well supports the notion of an entrepreneurial region, and the support and development of entrepreneurial conventions are central to the expertise at Seinäjoki UAS and ways the institution can stand out from the crowd.

Proposals for development

The strategy's crosscutting and focal areas have been broadly defined. They should be opened for discussion with the staff to determine whether it is possible for Seinäjoki UAS's RDI, together with its partners, to consider all of the crosscutting areas and develop international-level competence in those areas or to develop national-level competence in the focal areas. Seinäjoki UAS's connections to other organisations, such as SC-Research, the University Consortium of Seinäjoki, the Seinäjoki Centre for Technology and Innovation, Foodwest Ltd and the EPANET network, should be determined and the roles of the various actors should be defined clearly to ensure all resources are utilised effectively. In addition, other organisations, which engage in innovation, should be taken into account, not only within the region but outside the region as well (including international organisations), and collaboration with them should be enhanced in the areas of emphasis as stated in the strategy. Entrepreneurial-spirited conventions should be systematically developed by influencing the staff's attitudes, methods of motivation, competence and by keeping processes up to date. Customer service and contacts are to be co-ordinated between the different faculties such that customers can obtain services all in one place.

Internationalisation of research, development and innovation

International RDI activities and the significance of them were brought to the forefront in the evaluation report concerning the innovation system in Finland. International activities are also at the forefront in Seinäjoki UAS's strategy and

the RDI strategy. Internationality in Seinäjoki UAS's activities is evident on several different levels, and the institution actively participates in the development of international activities in South Ostrobothnia. Three different levels are evident in the institution's collaboration with international institutions of higher education: collaboration concentrating on student and teacher mobility, mobility and project collaboration, and, in particular, RDI collaboration in which interest groups also participate. It has been decided that RDI activities will involve a few strategic international partners.

Projects involve collaboration particularly in information technology related to elderly care and health care, cultural exchange and cultural production, the development of education and in the internationalisation of enterprises. There is also collaboration concentrating on certain geographical areas, e.g. the School of Technology collaborates with institutions in Germany and Vietnam, the School of Culture and Design in Italy, the School of Agriculture and Forestry in Estonia, the Business School in Germany and the School of Social Welfare and Health Care in Great Britain. Further indication of the deepening of international competence is the number of foreign, refereed publications. Seinäjoki UAS's proportion of foreign, refereed publications among the country's universities of applied sciences was clearly higher than the average.

In addition to its core activities, the institution is also responsible for supporting the internationalisation of the region's businesses. Responses in the interviews indicated that internationalisation should be based on a mutually defined need, a strategic inner determination, because it is not possible to do everything and to concentrate on everything.

Seinäjoki UAS's policy of concentrating RDI activities among a few strategic international partners in the future will be worthwhile. Internationalisation is an everyday routine for companies involved in RDI, and it is reflected in the research, development and innovation carried out at Seinäjoki UAS. Internationalisation should be a constituent that cuts across all areas of RDI in the institution, and not something that is taken up in separate projects or faculties. Utilising international competence and connections together with the region's actors, e.g. EPANET, the University Consortium of Seinäjoki, the Seinäjoki Centre for Technology and Innovation and Foodwest Ltd, improves the use of resources in the chosen strategic areas of emphasis. Partnership and collaboration in the area of internationalisation across regional borders, e.g. with other universities of applied sciences, academic universities and other suitable organisations promotes and reinforces international competence in RDI.

Proposals for development

The significance of internationalisation in Seinäjoki UAS's strategy and the development of it in the entire South Ostrobothnia region call for the genuine prioritisation of it in Seinäjoki UAS's RDI activities. According to the policy, suitable international partners, as regards quality, must be sought out. In addition to the aforementioned, strengthening internationalisation as an entity cutting across all RDI activities, instead of keeping it as something to be dealt with in separate projects, will increase the sphere of influence, but it calls for the development of appropriate indicators. Developing partnerships within the region and beyond promotes the effective use of resources and further enhances international competence. Supporting international RDI activities demands resourcing. The logic involved in international RDI is very different from the internationalisation of teaching or student exchange, and therefore the resources to safeguard the internationalisation of RDI should be separate.

The level of research in the RDI activities at Seinäjoki UAS

According to Statistics Finland, one criterion for research and development is that it produces something new. Scientific research refers to activities, which strive to generate new information but which are not predominantly geared toward achieving practical applications. Applied research, on the other hand, is predominantly geared toward a certain practical application. Product and process development refers to systematic activities, which aim to create new or improve existing materials, products, production processes, modalities and systems based on information acquired through research and/or practice. Innovation refers to all of the activities, which produce or which aim to produce new or improved products or processes, i.e. innovations. In its broadest sense, innovation refers to all of those activities that lead to or aim to lead to the use of innovations. (Statistics Finland 2009)

As regards universities of applied sciences, Gibbons' division of the production of information into Mode 1 and Mode 2 is essential to describe their activities. The latter mode is characterised by multi-disciplinarity, applicability, local contextualization, and social distribution. The research and development carried out in European universities of applied sciences is seen as concentrating on practice-based research, the empirical development of new products and services and consultative activities that generate services. RDI activities cannot be, however,

completely differentiated from each other (De Weert and Soon 2009: 19, Kirjonen 1997: 41–42). According to Statistics Finland, consultative activities fulfil the broad definition of innovation activities.

Niiniluoto (2003: 175–178) differentiates between descriptive sciences and design sciences, the latter of which produces technical norms, i.e. statements pertaining to the relationships between objectives and means. Design science involves the study of what is necessary to achieve a set objective. Typical design science involves the research of the means to do a given task or achieve a given objective. According to Hirsjärvi (1983: 189), scientific thought is marked by abstractness, theory, methodology and criticality.

The 12 project and service examples presented in the self-evaluation report of Seinäjoki UAS can be divided into three categories:

Applied research

- Managing cold temperatures in the meat industry (Kylmän hallinta lihateollisuudessa)

Development

- MATK02: Co-ordination of tourism in South Ostrobothnia 2008–2010 (Matkailun koordinointi Etelä-Pohjanmaalla v. 2008–2010)
- In Form: campaign against obesity in children and youth
- Development of services for production, robotics design and distance programming

Consultation

- Provincial project planning training
- Further education organised by the School of Social Welfare and Health Care
- TULUS training organised by Finn-Power Ltd
- Development of business competence
- Workshops pertaining to information acquisition
- Vaasa Housing Fair
- Private consultation

As the examples of projects in the self-evaluation report indicate, the RDI activities at Seinäjoki UAS concentrate on consultative activities. According to the self-evaluation report, the aim is to increase consultative activities to improve economic performance, i.e. emphasis on this area of activities is part of the strategic policy of the UAS. The only project presented in the self-evaluation report that can be considered to belong to the scope of applied research is the “managing cold

temperatures in the meat industry” (Kylmän hallinta lihateollisuudessa) project. With regard to the distribution of duties in the various institutions, the strategic policy can be considered well founded, because the focus of research in the University Consortium of Seinäjoki is expressly on that which involves business competence and foodstuffs, conjunct with the areas of focus at Seinäjoki UAS (Helander et al 2009: 72–73).

The projects presented during the evaluation visit for the evaluation broaden the understanding of RDI activities at Seinäjoki UAS, as the RDI activities pertaining to transfers of ownership and the Sustainable Forest Energy Project involve applied research. The number of RDI publications can be considered as a criterion for the level of research. In 2007, a total of 87 publications were published at Seinäjoki UAS. The number is 3.2 % of the publications for universities of applied sciences in the entire country, which is slightly under the institution’s proportion of the RDI volume for the entire country (3.6 %). Then again, 11 foreign, refereed publications were published in 2009, which is 6.1 % of the foreign, refereed publications for the whole of Finland (180). This is significantly higher than the institution’s proportion of the RDI volume for the entire country and of all publications. The high proportion of international refereed publications as compared to the RDI publications for universities of applied sciences in the entire country is indication of the high quality of the RDI activities carried out at Seinäjoki UAS.

The latest plans include permanent research and development environments, such as Living Lab and other laboratory- and workshop-type environments. These types of environments make the reinforcement of research possible by gathering together researchers, teachers, students and clients into a shared work environment instead of concentrating on individual projects alone.

Proposals for development

Strategic objectives for achieving a place among the best universities of applied sciences in the country and internationalisation call for an increase in more demanding projects, as far as research is concerned, together with other stakeholders in research, a more diverse scope of financial resources and the reinforcement of more fixed RDI structures with selected focal areas, which are more concise than at present. These are means by which Seinäjoki UAS could achieve the transparent, distinguished community of researchers mentioned in the self-evaluation. Concurrent with this, it is necessary to maintain the present area of strength, i.e. RDI services targeted toward businesses, because it is a

central part of the regional development duty of the UAS. Differentiating between the objectives of research activities and service activities more extensively than at present may prove to be a purposeful endeavour if Seinäjoki UAS ventures to strengthen its position as a significant actor in RDI on the national level. Reasonable profitability should be set as the performance objective for service activities. As regards research projects, the primary objective should be regional, national and international influence and the guarantee of quality teaching according to an approved strategy.

Research, development and innovation and teaching

One of the sub-goals stated in the Seinäjoki UAS RDI strategy is to make RDI and student theses an important part of teaching. The development of regional competence demands the true integration of teaching and RDI, an issue that has been considered in the UAS's pedagogic strategy for 2008–2010. An understanding of the integration of teaching and RDI can be attained by looking at the number of credits per student completed in research and development and the proportion of project-based theses in comparison to all of the theses completed.

According to the AMKOTA statistics database maintained by the Ministry of Education and Culture the total number of credits completed in research and development in 2008 was 23,509, which is 5.7 credits per attending student. This was the highest in comparison to all of the universities of applied sciences in the country and substantially exceeds the average (2.8 credits/student) for all universities of applied sciences. This is a significant change from the previous year as the number of completed credits per student in 2007 was 3.5. This is indication that the set objectives in the strategy are being achieved. The proportion of project-based theses was 84.6 % in 2008, which is also higher than the average for all universities of applied sciences in Finland.

The Projektipaja carried out in association with the engineering studies is one of the best examples of how well the integration of teaching and research and development is being implemented. Yritystalli, the TERVAS project and Sustainable Forest Energy were also good examples of student involvement in RDI activities. There is also a clear process definition of RDI-integrated teaching. Interviews with principal lecturers and other lecturers indicated that RDI activities from the perspective of integration are well in balance.

In some cases, it would be beneficial to use credits allotted to students more extensively and to allow for the substitution of supporting assignments with more demanding student work. The interviews did not significantly reveal the impact of RDI-teaching integration on student learning; this would require more emphasis on student guidance and counselling.

Proposals for development

As indicated by the statistics, the objective to integrate RDI and teaching seems to be successful on the average. However, there were differences between faculties in this area. Revising curricula, offering appropriate incentives, raising the requirements of the work in projects carried out by students as well as expanding the practices associated with the credits accrued in such projects could be ways to reinforce the principle of integration in the entire UAS.

RDI and regional influence

Seinäjoki UAS' RDI Strategy is in compliance with the policies set forth in the Polytechnics Act as it emphasises the duty of universities of applied sciences to carry out applied research and development that serves the purposes of applied teaching, supports the working life and regional development and is sensitive to the structure of industry in the region.

Seinäjoki UAS is located in South Ostrobothnia, the population of which is just under 200,000. Expenditures for research and development per person in the region are the lowest in the country (15 % of the country's average). The region's educational level is also one of the lowest in the country. However, statistics pertaining to the educational level of people less than 50 years of age indicate that it is by far better—thanks, in part, to Seinäjoki UAS. Differences in the demographic development within the region are, however, great.

The level of entrepreneurship in South Ostrobothnia is the highest in Finland. Small-scale businesses and agricultural entrepreneurship are typical types of businesses in the region. It has been predicted that there will be a need for labour force primarily in industry, as well as in health care and social services, educational administration and support services. The foreign population in the region is small.

The University Consortium of Seinäjoki is the most significant co-operative partner in the region with which a common model for higher education in South

Ostrobothnia has been created. Members in the consortium include the University of Tampere, University of Helsinki, the Sibelius Academy, University of Vaasa and the Tampere University of Technology.

The areas of focus as regards higher education in South Ostrobothnia include the food processing industry and the promotion of well-being, intelligent machinery and production systems, production of culture and experiences as well as public service innovations. Education related to entrepreneurship and business competence function as binding agents for these core areas in education and research.

The aim in South Ostrobothnia is to attain a critical volume of experts (30–50) for each core area. A fund will be established to support the development of activities. The capital of the fund will be increased to EUR 10 million by the year 2015. Additionally, investments in Seinäjoki Science Park will be increased to EUR 15–20 million. International partner networks will be fortified to support the development of the areas of focus.

There is rather extensive consensus in South Ostrobothnia concerning the direction of development, which is a benefit to Seinäjoki UAS in its endeavour to carry out its duty in the region. The institution has channelled its activities as expected and actors in the region are rather satisfied. Seinäjoki UAS is also expected to function as a type of foundation from which other actors in the area can acquire resources.

Seinäjoki UAS has been a rather active actor and joined several regional projects and has also funded many of them. This poses the question of whether or not there are sufficient reasons for participating in all of them, or are the activities being scattered too much. It is a question of a rather difficult balancing act, and the issue could be examined by reviewing the crosscutting areas based on the platforms of development.

Proposals for development

Seinäjoki UAS is a rather active regional actor. However, the institution should be even more active in directing regional development especially in the emphasis of practical innovation and as a trendsetter in the changes brought about by this innovation. However, this calls for a better understanding of innovation activities and the development of the expertise for it.

Defining the crosscutting areas in a new way is also a part of the expertise involved in practical innovation. Regional crosscutting areas should be defined from the perspective of the Mode 2-type of information production. This may create quite new types of resource combinations, which gain subsistence through practical “intertwined diversity”. This should be done together with the staff whereupon the issues involved in the crosscutting areas will be easier to understand and they can be given a platform for implementation. These platforms should be allotted a sufficient amount of resources.

Research, development and innovation and quality assurance

As stated in Seinäjoki UAS’s strategy, the most essential purpose of the institution’s RDI activities is to ensure the high quality of teaching and introduce the latest information. Seinäjoki UAS’s quality assurance system was defined and audited in 2009. An essential question to propose is whether or not the quality assurance system produces the information needed to improve RDI activities, and does it create effective means that improve quality. Although the organisation of RDI activities is incomplete, the process definitions associated with quality assurance have been considered. Seinäjoki UAS’s essential processes, teaching and RDI, as well as the RDI process diagrams for both projects and services have been clearly defined. RDI-integrated teaching and the annual cycle of faculty administration have also been defined, and the connection of the objectives and indicators with the development of the entire scope of RDI activities exists. Customers are requested to provide feedback, which is then processed. Reporting is organised through a SharePoint system.

The general guidelines, standardisation of processes and internal auditing for the RDI activities at Seinäjoki UAS have been addressed, and they support the development of activities. This is useful, for example, in comparing RDI activities among different faculties. The activities, actors and responsibilities are defined and documented to some degree. The descriptions of the processes reveal various grey areas in the activities. According to the interviews, the responsibilities between the centralised RDI organisation (the RDI service point) and the faculties are not completely clear to the staff, i.e. intelligible and concrete. Common courses of action should be introduced in every faculty to ensure everyone works according to agreed game rules, and collaboration between the centralised RDI organisation and the faculties can be carried out smoothly. The spreading of good practices should be promoted among RDI projects and, at best, introduced into the surrounding environment.

RDI is the other main processes, in addition to teaching, at Seinäjoki UAS and therefore it should have a clear and visible profile. Responses in the interviews revealed that recognition within South Ostrobothnia only is not enough for Seinäjoki UAS. The RDI activities appear to be successful, while there is still much to be done to develop internal collaboration. The integration of RDI and teaching still needs improvement to ensure quality teaching. The period teachers spend in the working life and collaboration with enterprises are visible in the improvement of the quality of teaching, according to the interviews. Students have also participated in RDI projects in many different ways. In practice, RDI activities are measured using parameters, which describe processes and which are primarily economically oriented. Studies pertaining to regional impact and customer feedback and customer satisfaction questionnaires pertaining to projects and services are indication of RDI recognition and customer satisfaction, which have proven to be commendable.

Proposals for development

RDI activities are measured in many ways. The range of indicators used should be elucidated and the qualitative indicators for RDI activities developed in such a way that the faculties have a few essential indicators to use, the relation of which to the staff's performance is visible. Comparing the results of feedback and internal auditing and discussing them together with the customers could improve the systematic utilisation of customer feedback. Peer-supported activities could be organised for projects, e.g. joint meetings or social media, to make the experienced good practices more visible and to spread them around for others to use. Economics-related processes should also be closely defined in such a way that they support and develop RDI activities, especially with regard to the sales of services and pricing.

CONCLUSION

The RDI activities at Seinäjoki University of Applied Science have progressed significantly in recent years. Indeed the organisation is suffering from changes in operations, but they have been identified, for the most part, in a well-implemented SWOT analysis. The evaluation group does not see the picture reflected in the mirror as being distorted, which facilitates the further development of the organisation. The evaluation group presents as its conclusions the strengths and good practices it has observed, upon which activities should be built, as well as a list of proposals for development. The group recommends that special attention be given to the listed proposals.

Strengths

The self-evaluation report contained descriptions of strengths and weaknesses according to the principles of intelligent honesty. The evidence supports the acquired understanding of a strong and developing UAS. The evaluation group brings forth some of the perceptions it has of the institution's special strengths as follows:

- RDI activities and the associated sub-processes are clearly defined.
- The integration of RDI into teaching is well under way.
- There is rather high consensus in the region of the direction of development, which facilitates the defining of Seinäjoki UAS's role in the regional innovation system.
- Seinäjoki UAS possesses a strong role as a regional developer.
- The region possesses much potential for the development of social capital and a mid-sized economy.
- Certain fields, such as research in entrepreneurship, possess international-level expertise.
- Collaboration between Seinäjoki UAS and EPANET functions well.
- Seinäjoki UAS possesses a diverse range of core expertise and a strong will to develop.

Good practices

There were many good practices observed in Seinäjoki UAS. The most significant of these were:

- Innovative operations models, for example
 - Projektipaja
 - Yritystalli
 - Simulation services
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- A regional higher education model, which has enabled the institution to answer to the challenges encountered in centralisation and the development of the entire region. Indeed the model is vulnerable due to changes, etc. in staff.
- There is a clear division of responsibilities in the co-ordination of tourism, which facilitates Seinäjoki UAS' function as a leader in regional development.
- Activities related to the field of wellness
 - In Form and TERVAS: regional and international significance
 - Further education in social welfare and health care

Proposals

- To reinforce internationalisation and make it an integral part of RDI activities, which would increase influence and which calls for the development of appropriate indicators.
 - To closely define the crosscutting areas and discuss them with the staff with consideration of whether it is possible for Seinäjoki UAS's RDI department, together with essential partners, to consider all crosscutting areas and to develop in those areas international-level competence or to develop national-level competence in the focal areas. To create thematic entities and the development programmes for them based on the development platform concept.
 - To develop the crosscutting areas with funding which has been retargeted toward development platforms that offer the opportunity to strengthen the integration of learning and RDI.
 - To enhance the understanding of competence in practical innovation, to offer training for it and to root it into the region's organisational culture.
 - To shift the focal point more on the quality of RDI activities rather than on the quantity.
 - To differentiate between the objectives of research and the objectives of service production more extensively as it may prove to be expedient if Seinäjoki UAS endeavours to strengthen its position as a significant RDI actor on the national level.
 - To establish regional, national and international influence as the primary objective for research projects and to guarantee the quality of teaching according to an approved strategy.
 - To revise curricula, to introduce appropriate incentives, to increase the level of requirements for the work students do in projects to expand the associated practices for allotting credits as these issues could be a means to strengthen the notion of integration and its implementation in the entire UAS.
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- To elucidate the range of indicators and develop qualitative indicators for RDI activities in such a way that the faculties have a few essential indicators to use, the relation of which to the staff's performance is visible.
 - To organise peer-supported activities for projects, e.g. joint meetings or social media, to make the experienced good practices more visible and to spread them around for others to use.
 - To closely define economics-related processes in such a way that they support and develop RDI activities, especially with regard to the sales of services and pricing.
 - To eliminate the confusion that can be sensed between the centralised RDI organisation (the RDI service point) and faculties by means of distancing and empowering.
 - To utilise entrepreneurial image of South Ostrobothnia and Seinäjoki UAS even more effectively as a strategic area of emphasis.
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