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THE EFFICIENCY OF HIGHER EDUCATION AND LEARNING IN HIGHER EDUCATION

A COMPARISON OF THE RELATIONSHIP BETWEEN INNOVATION AND
RESEARCH, TRAINING AND PRACTICE IN THE FIELDS OF TEACHER TRAINING
AND HEALTHCARE EDUCATION

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1. Introduction

Educational institutions face an increasing demand to create and share knowledge that can be used in international settings and in Hungary alike, and, at the same time, to become able to apply such knowledge. To ensure proper knowledge management, it is worth making attempts to understand the dynamics of the creation and dissemination of knowledge as deeply as possible. The successful operation of a learning society may depend to a great deal on the ways it is capable of managing knowledge in the interactions between individuals and organizations. In order to become able to understand and affect the mechanisms of knowledge flow and to interfere with the interactions between stakeholders in a meaningful way, it is preferable to gain more knowledge of how knowledge is created and disseminated in the individual sectors.

2. Theoretical background:

The expansion of higher education demands teachers to use pedagogical methods that increase the efficiency of the students' learning process even among the circumstances of mass education (*Green, 2014*). To ensure that students with variegated levels of background knowledge form a group whose members are capable of studying together and which applies the available teaching methods, new methods are required and participants of the process should employ a more reflective approach (*Schön, 1987*).

I observed how knowledge is created, shared and applied in the fields of teacher training and higher education in healthcare. My intention was to gain more information on how the relationships between research, training and practice are established, adapted and modified within the two sectors, and on how these relationships are affected by major institutional and discipline-related features.

I made attempts to shed light on the dimensions of the contemporary concepts of learning and knowledge. To this end, I examined how knowledge is created, shared, transmitted and applied in the sectors of healthcare and education. My research question concerned the followings: the role of the educational system in the process; how universities are capable of offering efficient support for the acquisition of knowledge; and how its operation can be made more economic, more efficient and better organized. I tried to identify the actions – and the persons who

should perform such actions – which and who can ensure that the theoretical and practical knowledge acquired at the university falls more in line with the demands of future users, that such knowledge is indeed transformed into innovation and that the labour market does not simply set out a series of demands for universities. To investigate this issue I give an account, among others, of the results of research performed by the OECD, the European Commission document which introduced the theory of knowledge continuum, the relevant results of researchers of scientific knowledge and specialized learning, and the further effects of such results.

The knowledge produced in practice by professional communities has become a major idea in the fields of the development of education. Communities of practice (*Wenger, 1999*) have become central elements of teachers' ongoing professional learning. I attempt to describe and analyze successful cases of innovation where new methods of learning – more specifically, the elements of professional learning embedded in a specific context and their connection with research and practice – are tested.

A differentiation between hidden and codified knowledge and a deeper understanding of the relationships between them are of significance. With regard to reforming the methods of the creation of knowledge, a redefinition of various learning methods can be a key subject to deal with. In higher education, efficiency can be increased through a process of education and research that is planned on the basis of demands defined by practice. Such a process calls for the active and iterative cooperation of the stakeholders who participate in the planning of education, in research and in practice (*Schön, 1987*).

This assumption necessitated the examination of the type of knowledge that is required in the given field of education, along with the degree and methods of the achievement of such knowledge. A knowledge management-focussed analysis of the process may bring us closer to gain more information of the similarities and differences. The primarily tacit knowledge that is created and shared in practice manifests differently in the two fields under analysis. It can also be assumed that the differences between the interactions between research and training on the one hand, and practice on the other hand – as manifested in the two sectors – are due not only to different practices or institutional forms, but also to different knowledge bases. While

examining the process of the dissemination of knowledge in these two sectors, I intended to identify the similarities and differences of the relationships between training, research and practice (*Hargreaves, 2000*).

To uncover these processes, I had to try to understand the characteristic features of knowledge produced and shared in practice (a type of knowledge that is basically tacit) and how it is shared or transmitted. With regard to the identification of tacit knowledge, a question arises concerning the possible ways of making it explicit or sharing it. An examination of organizational particularities may contribute to a solution. In this regard, a research institute and a higher education organization show differences. The comparison of the two sectors shed light on considerable differences between the fields of training in healthcare and teacher training.

3. A description of the investigation

In the empirical part (as opposed to a general trend of European comparison) I identified those major characteristics of the key actors of Hungarian health science training and teacher training: the planners and institutions of the training programmes. I make an attempt to explore the relationships between research, training and practice in the sectors of healthcare and education. I examined the ways training programmes are planned in those fields of training that are characteristic of the two sectors. What kind of curriculum planning processes are in use in the individual fields, and how efficiently do training programmes prepare the individuals who participate in such programmes? In the sector of education I examined the fields of primary school teacher training, teacher training and trainings in special needs education. In the sectors of healthcare and health science I examined the processes of medical training and nurse training. Finally, I present a successful example for new knowledge created in practice: the training for thematic special advisers. In the course of the trainings launched in autumn 2014 in the Hungarian Institute for Educational Research and Development, the trainings for thematic special advisers were planned to be inter-professional and problem-focussed. An analysis of such action research may provide a solid basis for the identification of the difficulties and advantages of the processes discussed in the research.

3.1. The objective and research questions of the investigation

In the empirical research, I specifically investigate knowledge that pertains to the given field of specialization and is produced partly through scientific research and partly through practice. What are differences and similarities between these fields, especially in terms of the relationship between research, training and practice? What are the processes that enable the research results to influence practice? I expect the research to contribute to the development of training programmes in the field of education, especially in teacher training, in order to ensure that such programmes take better into account the demands of practice and the particularities of places of training, and to facilitate a deeper knowledge of the ways the work of researchers, training participants and practitioners can interconnect efficiently.

The objective of the research is to compare the ways knowledge is created, shared and applied in the sectors of education and healthcare. To this end, I examine the mechanisms of the creation, sharing and utilization of knowledge in institutions of research and training in the specified sectors and in the related places of practical training, with special emphasis on teacher training and medical training/nurse training. I intend to uncover the dynamics of the relationship between the places where knowledge is created, shared and applied, training institutions and individuals who apply it in practice.

A major analytical unit and the subject of empirical data collection of the research discussed in the dissertation is the training programme. This approach seems to be obvious, as thinking about the learning environment and its planning offers the easiest way to the level where it becomes possible to gain an insight into the training objectives, the convictions of participants and the improvement of the quality of learning and teaching.

My research questions are based on the model that describes the three poles of *research*, *training* and *practice* and the dynamic relationships between them. Researchers, teachers and practitioners, located on the apexes of the triangle, represent specific approaches and formulate special demands with regard to the creation, sharing and application of knowledge. In my research, their behaviour and interactions define the investigation processes. Each pole formulates specific demands and requirements towards the other

two. This scheme entails *six* relations with regard to which questions reflecting special demands and requirements can be formulated.

Research questions and related hypotheses:

Q1. How can the latest research results be incorporated into higher education training programmes, and, in terms of discipline and/or fields of specialization, what characteristics can be identified?

H1. In the individual training sectors (education, healthcare, etc.), established practice in Hungary and in other countries display markedly different features. In certain fields (e.g. healthcare), recent research experience is easier to integrate efficiently, while the effective and fast application of knowledge plays an increasing role.

Q2. What type of knowledge do practitioners use and how is such knowledge supported by research?

H2. The nature of knowledge pertaining to practice differs by field of specialization; the opportunities and ability of research to influence practice also shows differences. A scientific understanding of the knowledge used by practitioners may improve the relevance of training.

Q3. What roles do research results play in the modification of training programmes? What is the role of related fields of science and the research on the given professions and the learning process itself? In which framework of interpretation can the concept of training and research be dealt with?

H3. The manifestation of research results in training display a small number of standard elements; the differences between fields of training are significant, depending on whether there is ongoing related research in the given institution and whether students are naturally involved in the process of gaining scientific understanding.

Q4. How organically is practice incorporated in training as a subject and tool of learning? During the training process, in which phase and along which objectives does practice appear?

H4. The higher education institutions operating in the individual fields of specialization rely to different extent on those elements of practice that support and encourage learning. In this respect, training in healthcare is more developed than teacher training.

Q5. In the field of practice (healthcare, education, etc.), is it possible to detect the understanding that a tool of professional development is scientific reflection and/or, parallel with practice, participation in related research?

H5. Although in a fragmented manner, scientific reflection – and learning that is associated with it and serves as an efficient tool of professional development – is detectable in practice. It is seen in more and more professions that practitioners are encouraged to participate in research projects.

Q6. To what extent does preparation for solving the problems that are encountered in practice form a part of these training programmes? Do students learn which forms of learning/training can support efficiently adaptation to individual and institutional changes? To what extent are universities aware of the existing or potential demands of institutions of training and healthcare?

H6. Preparation for the performance of tasks and for the solution of problems that may occur in practice are not necessarily reflected in training programmes with due emphasis. Institutions of higher education demonstrate a low level of understanding of the demands of organizations that admit students. Relevant best practices show considerable differences by sector, and, in several fields, lag behind international best practices.

3.2. Methods of investigation

I dealt with the theoretical framework of innovation in education and knowledge management and with the results of the innovation research of the OECD and the European Union through an analysis of documents and technical literature.

I shed light on the analysis of successful innovations in education (specific cases) in the fields of training in healthcare/medical training and teacher training with document analysis.

The research contains three distinct tasks that follow methodological approaches which are closely related yet distinct. The empirical data collection within the second research task is guided directly by the research questions formulated in the section above (*see Table 1*).

Table 1. Elaboration of the subject matter

Research task	Research method		Tool	Sample
An introduction to the theoretical background				scientific researchers, OECD, EU
Empirical data collection	Document analysis		Aspects	Reforms in England and Scotland
	Case studies	Document analysis	Aspects	6 institutions
		Semi-structured interview with researchers	Questions	two interviews / institution
	Questionnaire survey		Questionnaire	teachers of the 6 institutions N = 108, students of the 6 institutions N = 176
Preparation and conduct of training sessions	Action research		Conduct of trainings	thematic special advisers N=146+226

I conducted the research at the Medical School, the Faculty of Health Sciences and the Teacher Training Centre of the University of Pécs, at the Faculty of General Medicine and the Faculty of Health Sciences of the Semmelweis University, at the Faculty of Education and Psychology and the Faculty of Primary and Pre-School Education of the ELTE University, and in the Centre of Pedagogy of the University of Kaposvár.

When comparing the trainings, I examined the structure of trainings for SEN teachers (N1), primary school teachers (N2) and teachers (N3). I dealt with general medical training (O) the sector of healthcare, and with two fields of nurse training within training in health sciences (Á1).

Table 2. Investigation by field of specialization

	Education			Health care		
	SEN teaching	Primary school teacher	Teacher	Medical	Nurse (physiotherapist)	Nurse (imaging nurse)
inst1.	N1	N2	N3	O	Á1	Á2
inst2.		N2	N3	O	Á1	Á2

With regard to the practical application of knowledge and as a supplement to qualitative research, two questionnaires were compiled (one for the students and another for teachers and trainers). The questionnaire method was suitable for the collection of material on a relatively large number of samples. For the questionnaire for students, 176 replies were submitted between 13 August 2015 and 9 March 2016. In this case, I sought to understand what students think about the knowledge (especially, its practical applicability) they acquired at the institution. The objective of the questionnaire for students was to examine what type of experience students gained in the course of higher education trainings. For the questionnaires for teachers, 108 replies were submitted between 13 August 2015 and 12 February 2016.

4. Summary

As for the results of the investigation, it can be stated that the efficiency of the actors located at the apexes of the knowledge triangle depends not only on the amount of information they can gather, but also – and to a considerable degree – on how they can process such information and make it a part of their own thinking (absorption capacity). This capacity can be strengthened and shaped with pedagogical methods. The results corroborated that reflection plays a key role in this process of internalization.

With regard to the dissemination of knowledge, it was found that it will not suffice to create or identify knowledge; it should be transmittable. In other words: what type of pedagogical knowledge can be utilized to ensure that knowledge is not one-time or non-recurring, but rather, it can be described or at least shared. Another issue pertaining to sharing is who possesses knowledge. Is private or public property? However, this is a subject matter for future research.

The results also give evidence that – in spite of the complexity of the system – there are subfields which are easy to indentify, such as the planning and organization of joint research projects, where results can consist not only of a planned product but also of the knowledge which will enable us to use each other’s expertise to solve a problem.

Students need pedagogical professional support to be able to connect the experience acquired during theoretical and practical trainings.

Problem-based learning in itself will not suffice. Students need theoretical support which helps them orientate in terms of the validity of the experience they gained and to help them locate such experience within a wider context.

Connecting theory and practice is a comprehensive and complex process whose planning requires a close cooperation between teachers of theory and practice.

The theoretical framework presented in the dissertation may serve as a critical basis for further research. Further elaboration is required, and, in a more comprehensive research, a model could be developed to contribute to the satisfaction of students and employees (teachers and other staff) of institutions of higher education and to improve the organization’s absorption capacity.

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