

Doctoral (PhD) Theses

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**Professional capital and effectiveness of
innovative teachers in secondary educational
institutions of disadvantaged regions**

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The objectives of the dissertation, delimitation of the topic

In recent decades, social transformation has confronted educational systems with a number of challenges that cannot be handled with traditional organizational, content, and methodological solutions (Kopp & Széll, 2018). Schools all over the world are looking for new ways to improve their educational programs and improve student achievement. In international and domestic education policy studies, special attention is paid to teacher work and its connection with effectiveness (Geijsel, 2001; Lannert, 2009; Harpe, 2014; Szemerszki & Gyökös, 2014; Archibugi & Filippetti, 2015; Chen & Wang, 2015; Gyökös, 2015; Ronfeldt 2015; Akkermann & Bruining, 2016; Fehérvári, 2016; Nolan, 2017; Schleifer, 2017). Due to the changing social, economic, technical and IT changes of the 21st century, continuous skill development, cooperation, and the strengthening of professional relationships within and outside the walls of the institution are essential on the part of teachers. "Teachers matter", reports the OECD in its 2005 report, which focuses on the fact that "teacher quality" is a variable influencing student performance. Hanushek et al. under (2005)'s research shows that the difference in performance between schools is mostly due to differences in teacher quality. This is also confirmed by the McKinsey report (2007), which calls attention to the joint realization of three factors for the good performance of the education system, which emphasizes the quality of teacher work: the right people should be oriented towards the teaching career, they should become effective teachers during their training, and everything the system provides the highest quality education for the child. The 2010 McKinsey report foresees the strengthening of the teaching profession for our country in order to make the education system more effective. Hargreaves and Fullan's (2012) theory of professional capital also highlights the fact that human, social and decision-making capital, which can also be applied to the teaching profession, is decisive for school effectiveness. Human capital means the sum of individual qualities, knowledge, and skills. Social capital refers to the resources in the relationship system, with special emphasis on cooperation. Decision-making capital can be considered a resource with which the teacher can provide adequate answers to the challenges of his environment. In our research, we examine those educational innovations registered in the Hungarian innovation database that aim to increase student performance with their in-class and out-of-class "Good Practices". The most important characteristics of these innovations are volunteerism (innovation stems from the teacher's independent decision), institutional-level initiative ("bottom-up" type innovation) and

the organization of the activities of the teachers who develop the innovations into a network (Dobos, 2002). The innovation refers to the development of the pedagogical activity and efficiency of the school during and outside of the classroom, therefore in our thesis we use the terms pedagogical innovation and school innovation as synonyms for educational innovation. The concept of educational innovation is therefore linked to a specific institution in which the educational innovations were created. The professional base of the innovation is therefore the institution itself. The innovation does not exceed the framework of the current legal regulation, its introduction and application do not require legal authorization. The human, social and decision-making capital of the institution's teachers is the institution's resource, in which the innovations were conceived and their implementation realized.

The possibilities for measuring the effectiveness of educational innovations are very diverse. Madaus et. al. under (1980), school effectiveness means achieving the goals set for oneself, which are recorded in the Local Pedagogical Program. In addition to the educational goal system, other social and economic expectations may arise in relation to school performance (Townsend, 1994). Furthermore, the goal is not only that a given institution meets its own goals, but also how it performs compared to the performance of other schools with similar goals (Fitz-Gibbon et. al., 2002). One of the prominent goals of innovations in education is to increase student performance. Student achievement includes improvement in students' academic achievement, behavior, or attitudes (Slater, 1992). It is also important to examine the extent to which a given school can reduce the differences resulting from students' different abilities and socio-cultural family background, which are reflected in academic results on the one hand, and also affect their chances of further education (Szemerszki & Gyökös, 2014).

In the spirit of the search for a pedagogical path following the change of regime, until the turn of the millennium, many institutions, primarily using reform and alternative pedagogical methods, paid attention to sharing their innovative experiences and renewing power with others, thereby helping institutions looking for models and solutions. Nowadays, in the operation of educational institutions, there is a need to make internal innovations and contents useful not only within the walls of the institution, but also to try to spread them in different forms. Different forms of contact provide an opportunity to share and exchange knowledge and find solutions to similar pedagogical, methodological, local and regional challenges. In our work, we focus on the impact of educational innovations created from below, how they were implemented, and whether knowledge was shared between the various agents of the education system. We conducted our study in secondary schools, high schools and vocational institutions in disadvantaged regions in order to reveal the difference between

institutions that show and do not show a willingness to innovate, and among the teachers who work there.

The international collection and distribution of innovative educational practices and the operation of platforms that ensure knowledge sharing have become the focus of attention these days: Ashoka, Brookings Institution, Results for Development's Center for Education Innovations, EdSurge, OECD's Innovative Learning Environments project, Graduate XXI, HundrED, InnoveEdu, UNICEF Innovation Fund, Harvard's Global Education Innovations Initiative, Teach for All's Alumni Incubator, Global Innovation Fund (Winthorp et. al., 2018). Lancrin et. al. in their research conducted in 19 countries as part of the OECD (2014) report, they also used data from international measurements (PISA, PIRLS, TIMSS) to examine educational innovation. In domestic research, we also come across secondary analyzes of databases that dealt (OFI, 2009; TÁMOP, 2012; ImpAla research, 2013-2014) with certain issues of educational innovations (see development of learning organization procedures, frequency of innovative activities, dissemination of innovations). In recent years, not only internationally, but also in Hungary, the analysis of innovation activity in the education sector has increased with the help of empirical research (Österlund, 2005; Barmby, 2006; Leana & Pill, 2006; Mrázik, 2013; Halász & Fazekas, 2016; Halász & Horváth, 2017; Bush, 2018). Researchers often started from a subjective definition of innovation, based on self-evaluation, and therefore necessarily diffuse. The novelty of our dissertation lies in the fact that, thanks to a domestic initiative, it examines registered innovations and works with a distinctly objective concept of innovation compared to previous research. The regional analysis of the accredited "Good practices" database on the School Bag interface of the Education Office showed a remarkable regional distribution. In our dissertation, the "Good practices" registered in the secondary institutions of the two counties of Northern Hungary and the Northern Great Plains region (Borsod-Abaúj-Zemplén county, Heves county; Szabolcs-Szatmár-Bereg county, Hajdú-Bihar county) which can be considered the most disadvantaged in terms of social geography and we examine its connections. We want to test the claim in the literature that "schools that develop their disadvantaged students more successfully are characterized by a high willingness to innovate." (Varga, 2015:85) In our research based on professional capital theory (Hargrave & Fullan, 2012), we aim to observe what pedagogical innovations secondary institutions in a disadvantaged region have in order to increase student achievement, and what factors help the creation and spread of these innovations, thus helping the the aspirations of educational innovation policies. We also examine to what extent the ways and directions of the spread of innovations help to make innovations organic in the given institution,

and what role the faculty's human and social capital plays in the development and implementation of registered pedagogical innovations. We examine to what extent the effectiveness of educational innovations is supported by faculty cohesion and collaboration. We also focus on how the innovations that have become organic affect the retention of teachers. Based on the data of the control groups, we examine what factors can inhibit the willingness to innovate. The basis of our interview study is the exploration of the cultural and social capital dimensions of the family milieu, with the help of which we compare the groups of teachers according to whether they showed a willingness to innovate or showed no interest in the development of educational innovations.

The novelty of our research was the fact that there had never been a research that analyzed the data of educational innovation databases using scientific methods, during which an examination of the subject was carried out in connection with the OKM site database. The methodological result of our research is that we created a combined database using the educational innovation database and the National Competence Assessment site database, and its analysis formed one of the pillars of our dissertation.

Methods

In the first quantitative phase of the research, we recorded the existence of innovations registered in the Educatio Kft. Service Basket after the accreditation process between 2010 and 2015 in the case of the affected sites (OKM-PedInnov) in the site OKM database for the 10th grade of the National Competency Assessment in 2011 and 2018. Thus, we formed two groups of schools, the group of schools that registered educational innovations and the group of schools that did not register educational innovations. We examine a total of 370 secondary institutions (gymnasium and vocational institutions), of which 44 sites have registered educational innovations. Our research database represents a total of 223,578 students and 16,198 full-time teachers/instructors. 24,197 are studying and 1,962 are teaching full-time in an institution where educational innovation has been registered. The site database of the National Competence Assessment was expanded with educational innovation data, and based on this, a comparison was made between innovative and non-innovative secondary schools (gymnasium and vocational institutions) in two counties each of the country's two most disadvantaged regions (Northern Hungary and Northern Great Plains). (Borsod-Abaúj-Zemplén county and Heves

county, Szabolcs-Szatmár-Bereg county and Hajdú-Bihar county). As a result, we created six study groups: innovative-non-innovative high schools, vocational high schools and vocational schools. In the case of these last two types of schools, even though their names have changed over time, we kept their names in effect at the time of data collection. The institutions were selected by stratified sampling per institution type. In our study, we included teachers working in high schools and vocational institutions. When selecting the institutions, we also took into account the regional distribution, which is why we chose the two regions in which there are the most frequent institutions in which disadvantaged students are overrepresented. During our research focusing on the region, we looked for those schools that managed to become resilient institutions with the help of innovation. In this research, the concept of a resilient school is used in the sense that, according to the average CSH index, the school is in the bottom quarter, and according to various academic and behavioral indicators, the school was in the top quarter of the ranking by the end of the decade. We used the SPSS program for data processing, and in terms of methods, we prepared two- and three-dimensional cross-tabulations, variance analysis, cluster analysis and logistic regression. In 2011 and 2018, we examined the characteristics of the six groups of schools (high schools registering/not registering pedagogical innovation, vocational high schools and vocational schools) based on the characteristic indicators of the student composition of the institutions (CSH index, student composition index, index of people with learning difficulties, discipline and motivation). The aim of the comparison of the six test groups was to examine whether there is a significant difference between the schools that registered the pedagogical innovation and those that did not, and on the other hand, to map whether the indicators of the schools that registered the innovation changed after the registration of the innovation. The aim of the quantitative phase of our research was to analyze the medium-term effects of the pedagogical work in institutions developing registered innovations in the domestic environment, in the two most disadvantaged regions of the country, using statistical methods, and to compare the educational innovations in terms of demographic characteristics, student numbers, parent and student composition. registering and non-registering schools, as well as to shed light on the areas in which the presumed results of educational innovation activity can be identified. During the analysis, it was necessary to take into account that there may be additional, difficult to discover reasons behind the change in the indicators of the schools, however, according to previous research, the basic attributes explaining the change in the indicators examined remained unchanged.

We formulated the following research questions and hypotheses:

1. Research question: What demographic characteristics, number of employees, and parent and student composition are typical of the schools registering the innovation?

Hypotheses:

H1/a, Innovations are introduced in those schools where a significant part of the student composition is disadvantaged, because they are looking for professional solutions to achieve catch-up goals.

H1/b, Innovations are introduced in those schools where a significant part of the student composition is not disadvantaged, and the parents have secondary or higher education, therefore the goal is to nurture students' talents and get them into higher education.

2. Research question: What effect does faculty human capital have on teachers' willingness to innovate?

Hypothesis:

H2 Increasing the human capital of teachers stimulates the development of educational innovations.

3. Research question: Does innovation affect productivity?

Hypotheses:

H3 When comparing the results before and after the introduction of the innovation, it can be assumed that schools registering educational innovations will experience a positive change in student discipline and learning motivation, as well as an increase in the willingness to continue learning, a strengthening of contact with parents' homes, and a decrease in the number of people with learning difficulties.

In the second phase of our empirical research, we used a qualitative procedure, conducted in-depth interviews with a life history focus (Teachers and Innovation 2020), and explored the relevant patterns of the target group's thinking in the light of the teachers' environment, professional activity system, and special life path. The advantage of the method is its flexibility and holistic nature, as well as the possibility to examine phenomena in their complexity. The recording and analysis of semi-structured interviews was the appropriate method to learn about the individual's life path. This gave us the opportunity to get to know the

experiences, experiences, and subjective opinions of the interviewees, thereby expanding the range of data needed to answer the research questions. In the course of our research, we formed institutional groups corresponding to the stratification factors used in the quantitative research phase. The respondents were selected from the teachers of secondary institutions (gymnasium, vocational institutions) in the four counties of the Northern Great Plain and Northern Hungary (Borsod-Abaúj-Zemplén, Heves, Szabolcs-Szatmár-Bereg and Hajdú-Bihar counties). On the one hand, we conducted structured interviews with 12 teachers who enriched the professionalism of their institutions with their accredited educational innovations between 2010 and 2015, and registered their pedagogical innovations in the Educatio Service Provider Basket Database. Furthermore, with the help of the snowball method, we searched for teachers (12 people) who teach in innovative institutions, but at the same time did not submit educational innovations for accreditation. We chose two groups of teachers from the schools that submitted the innovation as the subjects of our interviews in order to examine what factors influence becoming an innovative teacher at the organizational level within a given institution. We were also interested in how the human, social and decision-making capital of teachers working in the same institution, registering and not registering educational innovations, affects the creation of innovations. We experienced the distorting effect of our research in that we also encountered teachers with an innovative approach among non-registration teachers. At the same time, it can be stated that the teachers who registered the innovation undertook to develop, document and subject their innovation to professional review, i.e. the external examination. During the comparative analysis of the text database of a total of 24 structured interview transcripts, we formed groups according to school types (high school and vocational institutions) and according to whether the interviewees registered good practices or not.

The data of the teachers' life histories were organized based on the dimensions of the individual life, the turning points of the individual, mainly professional career, and the characteristic adaptation strategies of the interviewee (Bögre, 2003). Individual events of individual life were examined along the cultural and social dimensions. Since the family background plays a significant role in student achievement (Pusztai, 2009), in the case of the cultural dimension, we tried to monitor how the system of expectations of the social environment in which the interviewee grew up can be characterized. We monitored what kind of career model the family and school environment offered to the individual, and how he was able to make use of all of this, and how he differed from this model. We considered it important to examine, within the framework of the cultural and social context, what structures the family environment, local society, school and workplace relationships form in the life paths of

teachers. Examining the effects of the family environment, we focused on the social situation of the interviewee, the effects of the memories preserved in relation to the parents influencing the life path, the family's system of expectations, and identification with it. We also monitored the effects of the relationship system of the local society. The mapping of school and workplace relationships also provided important data in terms of how the interviewee presents his schools, teachers, and key players. We observed how the examined teachers present themselves in specific locations, how they present the characters of their workplace, how they place themselves in the social environment at work. We examined what kind of conflict they reported and how important it was to the development of their life path. During the examination of the turning points in the individual life, we were curious as to which actors and social environment these turns can be linked to, how the individual interprets these turning points, and whether they can be interpreted as barriers or facilitators of development? In this context, we considered it essential to map the typical adaptation strategies of teachers based on the roles they assumed in their environment, how they interpret all of these, since in the world of institutions, people realize each other as acting types during interactions (Berger, 2007).

Other questions of the interviews were related to educational innovations. The aim was to reveal what motivational and human factors were behind the development of all this, how the relationship between the innovation and the life of the institution can be determined, what performance indicators prove the success or failure of the innovation, whether faculty cohesion had an effect on the effectiveness of the innovation, and whether the innovations that became organic and effective had an influence on the recruitment of teachers. We also focused on what connections could be behind the fact that someone did not submit an educational innovation for accreditation.

Summarizing the questions of our qualitative research:

Q1. Which of the family, school and workplace influences strengthen becoming an innovative teacher compared to the life path of non-innovative teachers?

Q2. What components can be used to identify educational innovation as an indicator of decision-making capital?

Q3. What type of motivation is characteristic of the innovative teacher compared to the non-innovative one?

Q4. Does the innovative teacher have greater human and relational capital than the non-innovative one?

Q5. In what areas are innovative teachers effective?

The textual data were analyzed using the Atlas ti.7 program.

Quantitative and qualitative methodological procedures are not mutually exclusive, therefore the paradigm with a combined/mixed methodological culture, the so-called our research was based on a third paradigm (Sántha, 2013). In accordance with the international literature (Kvale, 2005, Tashakkori & Teddlie, 2009, Creswell, 2012), we applied the approach of the combined methodology (Mixed Methods) during the evaluation of the results.

Results

During the quantitative data analysis, we discovered that the four counties registered the same number of innovations, but we observed differences in the case of school types. In the county of Borsod-Abaúj-Zemplén, the ratio of innovations registered in high schools and vocational institutions was almost equal, in Heves county mainly vocational institutions used the possibility of registration. In the case of the North Great Plains region, in Szabolcs-Szatmár-Bereg county, enrollment was dominant in almost the same proportion, and in Hajdú-Bihar county, in a more significant part, enrollment was in high schools. In Hajdú-Bihar county, mainly high schools, and in the other counties to a greater extent small schools, undertook the development of educational innovations. Innovation activity was mostly typical of county seats. The number of registered good practices also showed a difference. In Szabolcs-Szatmár-Bereg county, 1-2 per institution, while in the other counties, this number was 4-5 per site. In the case of the factors affecting innovation activity, we observed differences by region. A higher number of educational innovations were registered in the vocational establishments of the Northern Hungary region where the number of students with special educational needs was higher, so our hypothesis was confirmed in this educational segment. In high schools, however, the willingness to innovate showed a weak correlation with talent management. The number of sites of both groups of schools is overrepresented in terms of small and large schools.

Examining the composition of the institutions, we could see that in those institutions where educational innovations were registered, in several cases the site was completely renovated, while the sites of the other group of schools were mainly characterized by the renovation and expansion of parts of the building. The reason behind this is that the schools that registered the innovations were given more opportunities to participate in tenders aimed at

renovating the premises, and the institutions gained financial resources by selling their human capital.

Our new hypothesis was confirmed by examining the composition of the faculty, as we encountered stronger faculty and professional capital in those institutions where educational innovations were registered. Among the teachers teaching at these sites, the number of part-time and early career teachers is lower, and the number of those with a teaching degree or professional qualification is higher.

Examining the student composition of the institutions, we did not encounter differences per region, but differences between counties. In the case of the registering institutions, the values of the student composition index were the weakest in the locations of Borsod-Abaúj-Zemplén and Szabolcs-Szatmár-Bereg counties, in the case of Heves county we observed an even distribution between the districts, students in the locations of Hajdú-Bihar county for both groups of schools ranked 1st and They are located in the 2nd district. Examining the parental composition of the sites, we found that the proportion of those who maintain an active relationship with the school is the same for both groups of schools, but at the same time, when examining the phenomenon by school type, the phenomenon is clearly visible in the direction of vocational high schools and vocational schools compared to the proportion of those who maintain an active relationship. The lack of active contact with the school in the case of registration institutions is higher in the case of vocational secondary schools, while in the case of the two groups of schools it is equally decreasing, while this variable shows an increasing trend in the institutions providing the profession. We were able to identify the impact of educational innovations on student achievement in several areas: the proportion of people with learning difficulties, the results of the National Competency Test (mathematics, reading comprehension), student motivation, and the intention to continue their education. In the institutions where a pedagogical innovation was registered, in the case of those with learning difficulties, with the exception of 8-grade high schools, we can find higher values in the other school types, which explains that in these institutions the percentage of students with special educational needs, those with learning difficulties and the rate of grade repeaters was lower than in schools where registered educational innovation was not developed. Compared with the 2011 data, it can be seen that in the institutions of the counties where educational innovations were introduced, by 2018, more students from the sites were in the 3rd and 4th quarters than the 2011 data showed. In the case of the results of the National Competency Assessment, examining the ability points in mathematics and reading comprehension, we found that, compared to the social composition, the students of the site in those institutions where

educational innovation was not registered, the students performed better in both mathematics and reading comprehension than was expected in relation to the social composition of the site would be. In the schools where registration took place, the students performed below the expected value in the area of mathematics, while they achieved results well above the expected value in reading comprehension. This highlights that educational innovations do not primarily aim at the development of cognitive abilities, but rather have a more significant positive effect in terms of social relations, discipline, motivation, and student dropout. The examination of the effectiveness of educational innovations also confirms that the registered educational innovations had a positive effect on discipline, motivation and attitudes related to further education in the medium term. In the case of the institutions that registered educational innovations, we identified effectiveness in the development of student behaviors. Institutions that registered educational innovations showed success in the medium term in terms of student motivation in all types of schools, except vocational schools. Student motivation also showed a positive picture in connection with further education: the proportion of students who did not continue studying in high schools decreased in 2018. We also found a positive difference in the increase in the number of people choosing accredited higher vocational education with regard to vocational secondary schools and vocational high schools. In the case of vocational schools, we saw a decrease in continuing education in the form of high school education, and also in the case of students in this type of school, we observed a significant increase in the number of those who did not continue their studies. We found a correlation between the factors affecting student motivation: the more students are involved in advanced education and talent management, the more likely it is that student motivation will increase in those institutions where we encounter registered educational innovations. In the case of vocational secondary schools, group tutoring has the greatest effect on student motivation, however, we could not observe any significant activity in the case of those attending this type of school regarding the motivation to continue their education.

The results identified during the quantitative research thus confirm that in the medium term, those institutions can be called innovative in which there are innovative teachers as well as non-innovative ones, which points to the importance of the dissemination of educational innovations within the institution, according to which several teachers have adopted, successfully applied or further developed the "Good practice", which was highlighted by our interview research.

The structured interviews provided an opportunity to reveal the deeper connections of the teachers' views with the help of life journey narratives. The reconstruction of the life

histories pointed out that the positive or negative system of values and expectations conveyed by the family members during primary socialization is decisive for the life paths of the teachers associated with both types of schools in both regions: it influenced the career choice in a positive direction and encouraged the interviewees to settle down in their workplaces, but at the same time did not influence the willingness to innovate.

The strong bonds of local society are decisive for life paths, but at the same time, this area has no effect on the willingness to innovate. With regard to the school relationship system, we found a difference in the network of relationships connected to the world of primary and secondary school, as well as higher education, and its significance during the life journey. The passive behavior experienced in the community life associated with primary and secondary school does not mean that someone will be less proactive in the field of educational innovations later on in the teaching career, but at the same time, we identified innovative behavior in the teaching career in several cases among the interviewees with rich relationship capital in higher education.

The strong or weak bonds of the workplace relationship system have a decisive influence on the development of the career. The lack of support from the institution's management and colleagues during the years of starting a career and returning from gyed and gyed is not conducive to innovation activity. At the same time, the human capital accumulated over the years and the active relationship capital inside and outside the school not only provide a platform for innovation activity, but can also more easily cause job turnover. The increase of human capital and the mobilization of relational capital inside and outside the workplace have a motivating force in terms of progress in the teacher qualification system to a greater extent among those who submitted educational innovations. The informal relationship system and the lack of financial recognition also have a negative effect on the development of innovative behavior, which can also cause career abandonment.

During the identification of the motivational factors affecting the development of innovations, we identified internal individual motivational factors: the nature of the rewarding career, self-realization, the need for variety, the inherent beauty of knowledge transfer, the transfer of lasting values, the joy of working with children. In the case of work-related internal motivational factors, in addition to helping students achieve success and influencing their lives, the interviewees attributed an important role to the possibility of parental contact and the promotion of the school. Among the external individual motivational factors, we identified the possibility of professional development, the important role of job security, the importance of financial benefits and the possibility of building an intellectual career. In the case of work-

related external motivational factors, the interviewees considered the importance of positive experiences related to previous learning and teaching, the stimulating role of employer expectations and employer support, and the stimulating effect of contact with educational institutions and organizations to be important. In contrast to all of this, in addition to the lack of self-realization, the lack of need for variety, and the lack of self-confidence, the difficulties caused by the personal life crisis were identified as a factor acting against the development of educational innovations. As a lack of motivation related to the individual workplace, we encountered a low degree of effectiveness on the students' lives, and also generational differences within the faculty, methodological deficiencies, and a lack of subject-methodological challenges appeared among them. The lack of professional development and financial benefits also appeared as a barrier to individual external motivation. Negative experiences related to previous learning and teaching, excessive employer expectations, non-fertilizing, hostile workplace atmosphere, overload, lack of interest from colleagues, different professional interests among colleagues and lack of information appeared as a lack of external motivation related to work. In the case of the two groups of teachers, differences in motivation were evident in the region and type of school they teach in. In the case of the pedagogues of the Northern Great Plain region who submitted innovations, the preponderance of external motivation had an impact on the registration of their educational innovations. Among high school teachers, this was associated with individual factors (possibility of professional development, financial benefits), and in the case of vocational institutions, with certain workplace factors (employer support, contact with other institutions and organizations). Among the teachers of the Northern Hungary region, we found a predominance of internal motivational factors. In the case of high school teachers, work-related factors predominated (possibility of maintaining contact with parents, promotion of the school), while among teachers in professional institutions, individual internal motivational factors appeared (rewarding career nature of the field, transfer of lasting values). In both regions, we identified a lack of external work-related motivation (exaggerated employer expectations, lack of interest from colleagues, lack of information) among teachers who did not register innovations, regardless of the type of school they teach in. Examining the previous period of life, it is clear that the open, diverse (inter-institutional and cross-border) network of professional relationships established in higher education, the rich role interpretation and activity enhanced by professional self-realization foreshadows belonging to the type of teacher who registers innovation. The background of the motivational factors that have a negative effect on registration is the lack of work-related external motivational factors, which were already identified in the earlier years of their lives in

relation to the narrow network of professional relationships and the impairment of professional self-realization.

The basis of the motivational base related to the registration of innovations is based on individual factors, which includes both individual and workplace motivational factors. Examining the personality traits of teachers who show innovative activity, we identified traits of extroversion. Their information gathering was uniformly characterized by intuition, so they are interested in new possibilities and ideas. Their decision-making is mainly characterized by objectivity and analytical behavior. In all cases, their problem management is characterized by a flexible schedule, and they experience change as an opportunity. They are characterized by a high degree of willingness to innovate, they consciously look for a solution to an emerging problem. In the spirit of their metacognitive awareness, with the help of voluntary learning, they are able to overwrite their educational practice, examine it in deeper contexts, and create innovations with the help of this.

The willingness to innovate shows a correlation with the increase of human capital and metacognitive awareness. With the help of professional self-development, the innovative teacher feels the challenge, makes conscious decisions, makes efforts, tries to find an even better way in his work environment, promoting the development and improvement of his professional environment, which has a positive effect on student achievement. Even among the teachers who do not register educational innovations, there is a type open to professional development, creating or testing innovations, but the lack of metacognitive awareness, professional interest and development inhibits innovative sensitivity. In reconstructing the life histories, it became clear that the positive or negative value and expectation system mediated by the family members during the primary socialization is decisive in the life paths of the teachers associated with both types of schools in both regions. The two groups of teachers are characterized by extroversion, turning to new things. The positive family milieu acted as an incentive, expecting the individual to acquire additional knowledge, but in the case of resilient life paths, an extraordinary hunger for knowledge appeared. In the case of interviewees with rich relational capital in higher education, innovative behavior can be predicted in the future, and the strong or weak bonds of the workplace relationship system have a determining force in the development of innovative behavior. Continuing professional education and success at the workplace have a positive effect on the expansion of their professional capital and on continuous learning during their work.

Examining the faculty social network, it is clear that the open, collaborative network supports innovative activity on the part of the teachers. Networks opening to the outside or

closing within the institution have a decisive community-creating role. The outward-opening network generates cooperation between the teachers of the institutions and with the representatives of organizations outside the institution, with teachers from other schools, which gives the opportunity to transfer knowledge and increase professional relationship capital. Community-forming extracurricular activities stimulate the development of a network of relationships between teachers, which increases their professional cooperation. We identified patterns and weak bonds bridging structural holes in the teachers' network of relationships, which are not based on cooperation, but have a positive effect on innovation activity. However, due to the lack of support and dissemination, all of this remains an isolated data, as the leader can also be an obstacle to educational innovation. In renewing the educational work of the institution, the supportive, open management attitude can have a favorable effect on the institutional network.

In the formation of the network of social relationships, the childhood attachment to cultural values mediated by the family appeared as a defining element of the value transfer process in the later teaching career. The attitude of the children of families with an open network of relationships is able to encourage innovative behavior to the same extent as someone who has a resilient life path behind him, and represents an innovative approach in the network of workplace relationships due to curiosity and the desire for knowledge, while striving for self-realization. However, social capital may lose its intensity if the number of weak ties in social networks increases.

The impact of educational innovations on school effectiveness was confirmed by the results of qualitative research in the case of the school, parents, teachers and students. At the intersection of all these, we encountered the cooperation of teachers who play a prominent role in school innovations and their impact on student achievement. The development of educational innovations from below has a significant role in promoting cooperation between teachers, it is able to maintain cooperation, and it also works against marginalization in the case of teachers in the field. The results and attitude-shaping effect of the positive shift can be verified despite the fact that the registration of good practices was completed in 2015 on the Educatio Kosár interface. Today, the world of online platforms has opened up the possibility of professional development for teachers. They strive for mutual knowledge sharing and cooperation. However, the database examined in our research - which contains materials still accessible today - played a pioneering role in this process.

Our research results proved that pedagogical innovations are capable of bringing renewal to the world of education. It can also be concluded that innovative teachers have a

significant development potential permeating the complex system of education, so we have confirmed the position of the OECD (2005), according to which "teachers matter". Our research revealed that those teachers who have become innovative are those who have a higher level of education and prioritize the continuous development of their human capital. The rich network of relationships established in higher education and active participation in decision-making situations at the workplace are conducive to the birth of an innovative teacher. Our studies proved that the impact of educational innovations on student performance is significant: students became more motivated and their desire to continue their education strengthened, which is significant in order to reduce student dropout rates. Furthermore, the number of students with learning difficulties has decreased. We also found that educational innovations do not die if teachers are given the opportunity to share their knowledge inside and outside the institution, the head of the institution supports their innovations, we are provided with the opportunity for professional development, further education and financial benefits. Its results are novel, because for the first time they point to the medium-term results of educational innovations among teachers teaching in secondary institutions in the two most disadvantaged regions of the country from a socio-geographic point of view. Collecting innovations developed by teachers in practice and strengthening them with research evidence can be a source of systemic quality improvement. Their support and assistance at the system and institutional level is essential in dealing with regional and local problems and increasing student achievement. Therefore, in the course of educational policy decisions, it is extremely important to take into account that it is necessary to develop a system that encourages the creative, innovative, and researching teacher's career. The creation and stability of a legal framework that develops and supports continuous professional development and innovation potential is a fundamental condition for the quality development of education. In teacher training, it is necessary to give greater emphasis to the development of the need for continuous professional development, to the preparation for responding to challenges in a scientific and professional manner. In the course of further teacher training, it is necessary to develop the competences that help teachers cooperate and their problem-solving abilities, with the help of which they can embed their existing knowledge in new contexts in the future.

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List of publications related to the dissertation

Hungarian book chapters (1)

1. **Hornyák, Á.**: A tantestületi tőke jellemző vonásai a református közoktatási intézményekben dolgozó pedagógusok körében.
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