



Interrelation between Reflective Thinking and Organizational Knowledge with Master Teachers in Hungary

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School organizations form a complex system, the characteristics of which influence the effectiveness of teachers who work there, while teachers can also develop organizational knowledge through their learning practices. This implies that individual reflective thinking might also support the development of organizational knowledge through knowledge management practices within the school. This paper outlines the connection between reflective thinking and the aims to develop school organizations in Hungarian master-teacher programs. We coded 813 master-programs, which were then subjected to quantitative analysis, as we examined how individual reflective thinking can correspond with organization developmental goals. Our findings showed that teachers with higher level of reflective thinking are more likely to consider organizational goals when learning, implying that their reflective practices tend to expand beyond their own professional selves.

Keywords: reflection, collaborative learning, organizational learning, teacher professional development

INTRODUCTION

It has long been established in international education research that one of the most important factors determining the success of education is the professional effectiveness of teachers (OECD, 2004; 2014; 2017). The recognition of teachers' role being so influential has been accompanied by the paradigm of life-long learning, which then resulted in the theoretical and practical need for conceptualizing a framework for teachers' constant professional development (CPD) (Sachs, 2007). Even though the variegation of pedagogical knowledge has been clear for researchers since the 1980s (Falus, 2006), the concept of CPD only acknowledged this diverse nature of knowledge decades later. Today literature recognizes that teachers can walk through several learning paths, accepting the same variety of learning (Rapos, 2016), while also

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identifying some general characteristics that play a crucial role in the effectiveness of learning. One example is the organizational aspect of learning (OECD, 2014). Studies have proven that in order to increase the effectiveness of learning, it should be embedded into the context of school organization (Clement&Vanderberghe, 2000; Desimone et al, 2002.), which idea has directed attention to the importance of horizontal learning (Vesico et al, 2008). Collaborative learning of teachers has been found to be related to the behavior of teachers and the efficiency of students (Cordingley et al, 2005), which valorizes the importance of the knowledge management capabilities of the school and the knowledge sharing practices of individual teachers. It is also worth noting that the various learning paths of teachers result in new knowledge, which, through horizontal learning, can then manifest as organizational knowledge as well (Nonaka, 1994). Thus, the success of individual professional learning can be interpreted as source of organizational knowledge development as well.

The idea that interprets teachers' learning as their professional development has also allowed researchers to utilize the different approaches to knowledge, helping them to place CDP on the grounds of modern learning theories. The new approaches to CDP, where teachers' autonomy is key to transformative learning, have valorized the concept of reflection, which have been interpreted as a source (Schön, 1987) or a conscious cognitive strategy (Szivák, 2014) for professional development. Reflection and professional development form a strong conceptual unit (Taggart and Wilson, 2005), which can act as a catalyst for learning. Reflective thinking is key in identifying possible learning paths, forming development plans and effectively managing new knowledge.

The same role of reflection has been identified in the case of organizational learning as well (Knipfer et al, 2013). Organizational research has long been focused on learning and knowledge management as the potential to learn and develop is one the most important characteristics of any organization (Casey, 2005). Learning organizations have been defined as organizations that are able to create, share and utilize knowledge (Seddon-Cairns, 2002; Wenger et al, 2002), where horizontal learning enjoys an emphasized role as both a practice of knowledge sharing and a form of learning.

As we have stated above, the new knowledge, created by the learning teacher, might get embedded into an organizational context through various knowledge sharing activities, thus becoming a part of organizational knowledge. Keeping in mind the crucial role reflection plays in effective learning, we can hypothesize that individual reflective thinking is likely to act as an indicator of enriching organizational knowledge. This connection is yet to be discovered in depth and needs to be observed by different angles. Our study takes the first step by identifying the parallel presence of reflective thinking and organizational knowledge development. In this article we argue that there is a direct link between the individual reflective thinking of developing teachers and their aims to share and utilize their knowledge at the level of the organization. Understanding this connection seems necessary if we are to effectively support the professional development of teachers and contribute to schools becoming learning organizations.

Theoretical Framework

Knowledge management of teachers – horizontal learning

As teaching became accepted as a profession, the idea of teachers being autonomous and possessing the necessary professional potential to make decisions remarkably strengthened (Sachs, 2016). This autonomy also vested the authority over their own learning and development in teachers, contributing to such concept of CDP that acknowledges several different learning paths. The recognition of possible variations of learning has had long-lasting effects on theoretical approaches towards professional development, such as the validation of informal learning or the recognition of tacit knowledge and former professional experiences being accepted as materials and targets of learning (Rapos, 2016; Aldahmash et al, 2019). Teachers' learning-types have been categorized in several ways; the most influential pieces of literature even attempted to design models that can help to differentiate between those types (Kennedy, 2005; Sachs, 2007). Their models seem to create a hierarchy, at the top of which we find learning processes that result in the creation of new knowledge. This concept of CDP has been termed as 'transformative', however, other concepts also include the possibility of knowledge creation through innovation or remodeling (Sachs, 2007). What characterizes these concepts is that the responsibility for learning stays at the teachers, making them the creator and owner of the new knowledge that this learning process results in.

Not only did autonomy influence concepts of development, but also raised the theoretical and practical problem of collaboration between teachers. Researchers agree that collaboration is a strong prerequisite for professional development, but only if it derives from autonomy and not enforced on teachers (Hargreaves 2000; Korthagen 2004). The concept of collaboration has also helped to place CDP into an organizational context and it has even offered a new possible method of conceptualizing professional development (Clament&Vanderberghe, 2000). The appearance of the organizational context corresponds with the concept of professional support, which is also one of the general features of CDP models (Villages-Reimers, 2003). It also points out the importance of horizontal learning, which is realized through the collaboration of autonomous teachers.

Horizontal learning constitutes a significant proportion of teachers' development (Gerse et al, 2014), in which, unlike in the case of the more formalized vertical learning, teachers learn through a network of their professional peers, resulting in a much more autonomous knowledge management. As a result of the lack of a predetermined set of explicit knowledge, horizontal learning is more likely to be able to make room for tacit knowledge in professional development (Eraut, 2003). Horizontal learning also supports the idea that learning should not be separated from practice, but should be incorporated into it, forming a coherent unit. This unity might also satisfy teachers' need of their learning reflecting on practice (Rapos, 2016). However, knowledge sharing activities of teachers might not bear all the characteristics of horizontal learning, as they might resemble vertical learning with teachers simply transmitting professional knowledge, instead of building it together with their peers (Cheng, 2011; Kálmán, 2016). Pieces of international (OECD, 2007) and Hungarian (Sági, 2015) research have clearly shown that different forms (e.g. professional discussions with colleagues; visiting open lessons;

taking part in the work of in-school professional communities) of horizontal learning provide the majority of teachers' time spent on activities that might promote professional development. This could be the reason why this form of professional development has also started to receive attention as a part of different national educational policies (Instance and Kobayashi, 2012).

Horizontal learning also presupposes various knowledge sharing activities amongst teachers, which, in the absence of an 'authority' that is required for vertical learning, provides more responsibility for teachers for their own knowledge management. Thus, we can interpret autonomous learning and knowledge sharing as one theoretical unit of knowledge management, as, in order to be effective, both need to be characterized by responsibility, support and collaboration.

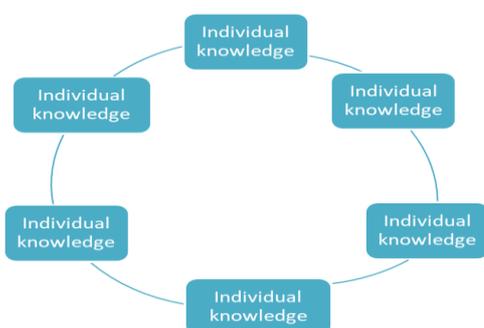


Figure 1
Horizontal learning

Teachers' reflective thinking

The concept of reflection, or reflective thinking, has been around in education-research for long decades (Schön, 1983). It has been defined and conceptualized in several ways (Taggart&Wilson, 2005), and while approaches all seemed to focus around actions triggered by a problem (Schön, 1983), today we tend to understand reflection more as a cognitive process, which supports the conscious analysis of practices and facilitates professional development (Taggart&Wilson, 2005; Szivák, 2014). In this paper, we utilize the latter interpretation.

Reflective thinking and reflective practices play a crucial role in learning (Avis, 2010), as they constantly bring forth new professional questions, while triggering different paths of development, which teachers have identified. Reflection has also been connected to learning, using Korthagen's (2004) model of interpreting teachers' behavior and practices, as it has been pointed out that reflection can modify those deeper, psychical constructs of teachers (mission, identity, beliefs) that immensely determine their practices (Szivák, 2014). Teachers' reflective thinking has also been understood as a tool to enhance student-performance through developing every-day practices, such as assessment (Ashraf&Zolfaghari, 2018). This interpretation of reflective thinking also allows the concept to be attached to teaching practices.

Effective learning is understood as a process that results in the modification of practices (Lee&Low, 2014), a phenomenon that requires changes in those deeper layers of teachers that reflection can reach and influence. Hence, reflective thinking could be interpreted as a regulator of the entire learning process, making it more conscious, focused and possible to assess later.

This approach interprets reflective thinking as a cognitive mechanism that accompanies professional development. However, the complexity of reflection may differ in case of various targets of analysis. Researchers have identified three hierarchical levels of reflection depending on the depth and complexity of reflective thinking, while also differentiating them on the width of analysis, meaning who they consider while trying to interpret certain phenomena (only themselves, students, organization, educational system, values of society, etc.) (Lasley, 1992; Taggart&Wilson, 2005). They have conceptualized: a) technical (beginner) reflection, only dealing with specific and practical issues derived from personal experiences, b) contextual reflection, analyzing more general phenomena embedded into contexts, while questioning their own practices, c) dialectic (critical) reflection, interpreting moral and social factors of their practices, using their expert knowledge (Szivák, 2014). These types are flexible, reflective practitioners might apply them simultaneously, always searching for the most suitable strategies to answer their questions (Liakopoulou, 2012). If we attempt to interpret these from the perspective of learning, we can state that higher levels of reflection are more likely to correlate with effective learning, as those are the ones that consider contexts (e.g. school organizations) and collaboration, while being derived from deeper psychological constructs (Korthagen-model) that could result in the change of practices (Korthagen, 2004).

The growing theoretical framework made it inevitable to design a new model for reflection, which, instead of a practical problem, places the self into the center of reflective thinking. In the strategic model of reflection (Szivák, 2014), the recognition of self-efficacy invokes an analytical process, which, through asking adequate questions and focusing on the goal, considers the context and the relevant professional capacities, which eventually leads to possible testable and evaluable solutions. This model also presupposes and allows the modification of the strategy itself. This latter characteristic of the model can be interpreted as its potential for learning reflective thinking. For our present research goals, we need to emphasize the importance of the context of learning in the model, which means students, other teachers and the entire organization. We can also add that by searching for the available professional capacities, the reflective teacher might consider the knowledge of the organization. The success of reflective practice also depends on how individual self-efficacy relates to the organization and whether the organization provides the necessary support for reflection (Szivák and Verderber, 2016). While searching for adaptable answers, the reflective teacher considers those contextual factors that influence students' learning, thus they can utilize the knowledge of other teachers or even organizational knowledge. For the purpose of this study, we differentiate between reflective and non-reflective teachers based on the whether the specific teacher displays any signs of reflective practices (as interpreted in the model above) which relate to their professional learning activities.



Figure 2

Strategic model of reflective thinking (Szivák, 2014)

Organizational knowledge – the professional capital of the school – reflection

Organizations need to learn. It has been pointed out that they can only do so if they possess the ability to learn, which is determined by the level of their knowledge management (Vera et al, 2011). The characteristics of organizational knowledge management have been interpreted as the organization's ability to create, share and utilize knowledge (Seddon-Cairns, 2002; Wenger et al, 2002; Kools&Stoll, 2016). Those organizations which, through these various practices, display such level of knowledge management can be termed learning organizations (Retna, 2006). Those schools that meet such requirements provide a suitable environment for horizontal learning, as they deliberately support and encourage teachers to create new knowledge through learning and then sharing it with their colleagues (Nonaka, 1994; Butt&Retallick, 2002; Kools and Stoll, 2016). In order to achieve that, schools need to foster a strong professional bond between its teachers through encouraging horizontal learning, leading teachers to realize that the success of their learning processes are interdependent (Schleicher, 2015).

The theory of Hargreaves and Fullan (2012) reinforces the idea that the influence of the organization is relatively stronger on students' efficacy than one of individual teachers. Thus, besides the human capital of the individual, attention needs to be paid to the social capital of the school as well. They introduce the concept of decisional capital, which derives from the idea that teachers constantly make professional decisions, so they need to structure and utilize their human capital. The key element of their theory is whether teachers are able to transfer their human capital to the level of the organization, making it a part of the social capital of the school.

Reflection has already been identified as a catalyst for organizational learning. Knipfer and her colleagues (2013) referred to the phenomenon of individual knowledge becoming the knowledge of the organization as bottom-up learning, in which reflection is interpreted as a tool or driving force for organizational learning. In their concept – utilizing the theory of reflective learning (Avis, 2010) - emphasis is drifted towards collaborative reflection, which is built on previous experiences of individuals and team learning. Collaborative reflection is realized through team action learning (Reynolds, 2011) and manifests in certain reflective phases (planning, acting, observing and reflecting). While this theoretical approach interprets reflection from a psychological

perspective, it concludes that “organizational learning evolves as collaborative reflection cumulates the knowledge of individuals” (Knipfer et al, 2013).

Using the professional capital theory, we can claim that reflection might serve as a ‘bridge’ between human and social capital, while it can also help activating the decisional capital of the individual. Thus, reflection can act the same way between teachers and learning organizations, just as it does when connecting layers of teachers’ psychical constructs. Once the theoretical conceptualization of reflection (strategic model) is placed next to the professional capital theory, we can deduce that individual reflection holds stakes for the whole organization (Szivák&Verderber, 2016). As the concept of social capital also provides a wider interpretation of collaborative learning, where learning processes of individual teachers, through reflection and their various knowledge sharing activities, are considered to be building-stones of organizational learning.

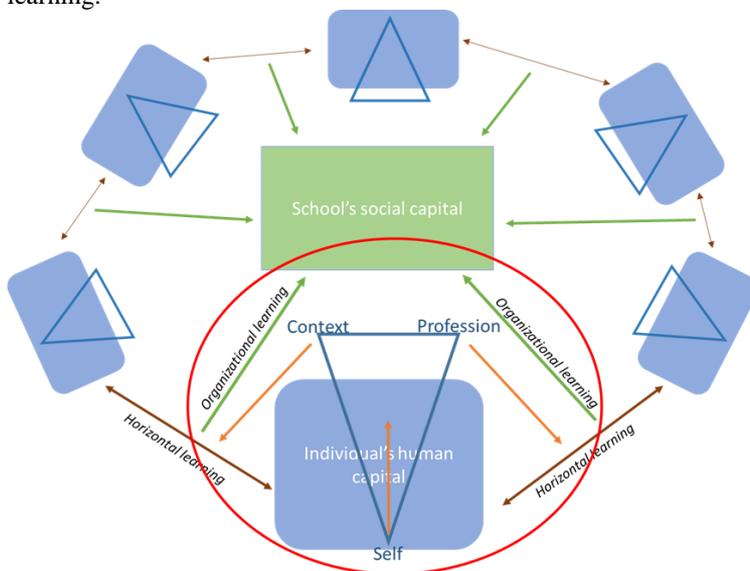


Figure 3
Development of organizational knowledge through horizontal learning

The various concepts utilized in this paper are drawn from the theoretical background that identifies teachers as active and responsible learners who regularly use the strategy of reflective thinking to foster the efficacy of their professional learning activities. Teachers are considered autonomous learners who realize that their professional activities take place in a wider context, mainly their own organization, so they consider these aspects of their professional learning as well.

In this paper, we aim to examine whether individual reflection contributes to and is in direct connection with organizational learning through horizontal learning in the case of master-teachers in Hungary.

Master-teachers in the Hungarian educational system

Master-teacher is a new category of practicing teachers, which was introduced as part of the official career-model in Hungary in 2015. The career-model is built on hierarchical categories and provides a fixed promotional path based on time and levels of the various teacher-competences. While the lower-level categories only focus on competences, master-teacher category is built on a completely different approach of teacher-profession.

Master-teachers are expected to be “excellent teachers, who, besides their exemplary teaching practice, help the renewal of the Hungarian education through their various activities on organizational and systematic level as well.” (Description of master-teachers, 2015). The category accepts teachers as professional individuals, who possess the expertise that has the ability to change practices on different levels, while also forming teaching profession itself. This expectation towards master-teachers are to be realized through four dimensions of their activities: constant professional development, research, innovation and knowledge sharing. While these dimensions seem to be separated at first, one can easily understand that they are all related to learning and knowledge management. CDP, incorporating and accepting various learning paths, is the dominant concept of this model, as the other three can be understood as certain segments or forms of professional development. The approach the master-teacher model reflects is a revolutionarily innovative one in the Hungarian context, as it is focused on professional learning of autonomous teachers, which can be utilized for the entire educational system, while it also reinterprets accountability of teachers. It also provides a possible career-path and financial motivation for applying teachers.

The master-teacher model imputes noteworthy professional expertise to practicing teachers, which should be utilized. Using the professional capital theory as interpretive background, we can deduce that this educational policy acknowledges the importance of human capital and aims to transfer it into social capital. While doing so, it also encourages horizontal learning as knowledge sharing is one of the building stones of master-programs, reflecting on the fact that the master-teacher model makes extensive use of an expansively accepted interpretation of constant professional development recognizing various types of knowledge and learning. We can also claim that by motivating teachers to share and utilize their knowledge, the master-teacher status might contribute to schools evolving into learning organizations. As CDP is such a central element of this model, it is worth observing what mechanisms accompany professional learning processes and whether these support a wider utilization of such learning.

Each teacher applying to the master-teacher category had to design a so-called 5-year master-program, in which they delineated their professional plans, centered on the four dimensions of activities. In accordance with how the model interprets master-teachers, they were not given specific requirements, instead they receive clear professional guidelines for their professional development in the forms of a written description of the status and a 1-year long pilot training. Dimensions are understood as competences, which are described only to an extent that does not reflect accountability, but supports the planning of their own professional learning.

The key aspect of the entire master-teacher category is the process through which the professional knowledge of master-teachers becomes a driving force behind the development of the whole educational system. This presupposes professional networking, but also draws attention to the organizational level. Remembering that effective learning is embedded into an organizational context, we can hypothesize that professional development and knowledge sharing are parallel activities that mutually strengthen each other. Reflection, being a crucial concept of both individual and organizational learning, is expected to accompany both activities. Hence, we formulate the following research question:

How does the presence of reflective thinking cohere with the plans to develop organizational knowledge in master-programs?

Research Context

The Research Group for Organization, Teacher and Teacher Education of ELTE's Institute of Education (Budapest) carried out a comprehensive analysis of master-programs of those would-be master teachers' who participated in the 2015 pilot version of the master-teacher qualification process. Through observing the master-programs, they sought to understand how interventions and systematic expectations of educational policies form the professional roles teachers construct for themselves, while also examining how future master-teachers plan to influence the educational system. They hypothesized a dynamic interrelationship between the individual and the system, in which the concept of master-teachers offered a genuinely innovative approach on teachers and their role in the system. The research group designed a 650-variables long code-system through categorization of content, which provided the possibility to subject the master-programs to quantitative analysis. Data collection took place during the spring of 2018 (February 2018 – May 2018) through analyzing and coding following the previously established code-system. The research presented in this paper utilizes variables and data derived from the database used in this comprehensive research project.

Our hypothesis was that there is significant difference between reflective and non-reflective teachers in their aims and practices to develop organizational knowledge. In order to test our hypothesis, we applied descriptive statistical tools and chi-square tests. We tested each variable relating to the development of organizational knowledge, forming the hypotheses that a significant difference exists between reflective and non-reflective teachers in all cases.

Sample

We analyzed the master-programs of 813 master-teacher applicants, who designed their programs using the guidelines provided in the description of the master-teacher category. The participants arrived from all parts of the Hungarian educational system, including pre-school educators, primary and secondary school teachers, vocational teachers and special education teachers, while also representing all regions of the country. According to the description, the category is open to teachers who has already reached the third level of the career-model, which necessitates at least 15 years of professional practice. The sample thus includes all those teachers who applied to the

first round of master-teacher qualification, but also bears information about all learning teachers who are committed to professional development in all types of educational institutions in Hungary.

METHOD

Having the database of all 813 teachers at our disposal, we observed whether the parts of their master-programs that focused on the dimension of constant professional development displayed any attributes of reflective thinking (henceforth termed as ‘reflective teachers’), using quantified content analysis. We interpreted this group of teachers based on whether they displayed activities relating to reflective practices, irrespective of the level of reflection. The coding procedure involved drawing up a rigorous coding-scheme and included trial-coding carried out by pairs. The selected method provided a unique possibility to uncover the reflective practices of actively learning teachers on a textual level as teachers in the sample had been asked to draw up their plans about their own professional development and their attempts to enrich the professional capital of their organizations. In order to answer our original research question, we formulated sub-hypotheses that were in compliance with the available variables. We altogether used 7 variables (shown in Table 1 below). One of them was the variable of ‘reflective thinking’ that we used to create the two sub-groups. Then, we compared and contrasted the resulting two sub-groups on the grounds of planned activities and aims having the capacity to facilitate organizational knowledge development. These pieces of information were identified in the section of the master-programs describing planned professional knowledge sharing. The applied variables focused on whether they considered the possible organizational effect of their professional activities and whether they were planning to utilize their knowledge on organizational level as a part of their knowledge sharing activities. The second set of variables that we used to compare the two sub-groups involved different professional activities that we interpreted as forms and practices of horizontal learning. We observed if applicants displaying reflective thinking were more likely to participate in non-formal professional discussions with their colleagues, actively take part in the work of different in-school professional communities and share their experience and advice with their colleagues in the context of visiting and observing their lessons. We only considered activities that can be interpreted as practices of autonomous horizontal learning. Finally, we compared the sub-groups based on whether there existed a difference between them in including an organizational analysis in their master-programs. All these categories had been clearly defined by the code-system used during the analysis of the data and included an error-correcting phase as well. The reliability and validity of the data had been ensured by the clear conceptual background of the different variables. For quantitative analysis we used SPSS Statistics Version 27.

The variables we used for analysis belonged to the master-teacher dimensions of CPD and knowledge sharing, reinforcing the idea that these two phenomena are parallel and able to mutually strengthen each other. At this stage, it is also worth mentioning that the master-programs contained plans, which means we could only observe future commitments of applicants. However, as the master-programs were to be executed in a

five-year period, we can consider them as the basis for professional practices in said five years, making them a valuable source of information about developing teachers.

FINDINGS

We found signs of reflective thinking in connection with CPD in the case of 307 (37.7%) would-be master-teachers. This proportion might be due to the fact that applicants were not required explicitly to include reflection in their master programs.

As we further analyzed the sub-group we had created based on the presence of reflective thinking, we found our hypotheses being upheld about the significant difference between reflective and non-reflective teachers in whether they considered organizational effects ($p=0.000$) and utilization ($p=0.000$) of their master-programs. The majority (521 – 64.1%) of the applicants planned such knowledge sharing activities that were intended to facilitate the utilization of their knowledge on an organizational level. In this case, the proportion might be considered high, but it is put into context as soon as we are reminded that the original aim with master-teachers was to encourage them to share their expertise so that it might initiate changes in schools and the entire educational system. However, reflective thinking in the context of professional development cohered with the aim to develop organizational knowledge.

We found the same results in connection with activities interpreted as forms and practices of horizontal learning. In case of all three variables that we used in this part (non-formal discussions with colleagues [$p=0.000$], active participation in the work of in-school professional communities [$p=0.000$] and sharing experience and giving advice in the context of visiting and observing other teachers' lessons [$p=0.001$]), the analysis showed significant difference between reflective and non-reflective teachers. These activities generally seemed to be substantially common in the applicants' knowledge sharing activities (304 – 37.4%; 402 – 49.4%; 230 – 28.2%). We identified 65 (8%) cases where all three forms of horizontal learning were present.

We also observed whether reflection cohered with the analysis of the master-teachers' organization. One of the sections of the master-programs was supposed to be dedicated to analysis of context of the applicants' professional activities. As the original aim of master-teachers was to trigger changes in practices of others as well, master-programs (just as professional learning itself) cannot be interpreted without organizational context. The number of would-be master-teachers who actually included such analysis was 413 (50.8%). We also found that there was no significant difference between reflective and non-reflective teachers in presenting this organizational analysis ($p=0.538$). This result encouraged us to further observe this phenomenon, so we analyzed whether the aim to utilize knowledge on organizational level cohered with the presence of organizational analysis. We found that there was a significant difference between applicants who included such analysis and those who did not in planning the utilization of their knowledge in favor of the organization ($p=0.000$).

Our findings managed to uncover the existing correlation between the main theoretical concepts of the study by proving the connection between reflective thinking and knowledge sharing activities and organizational goals, thus underlining the presence of reflective thinking as an indicator of enriching organizational knowledge.

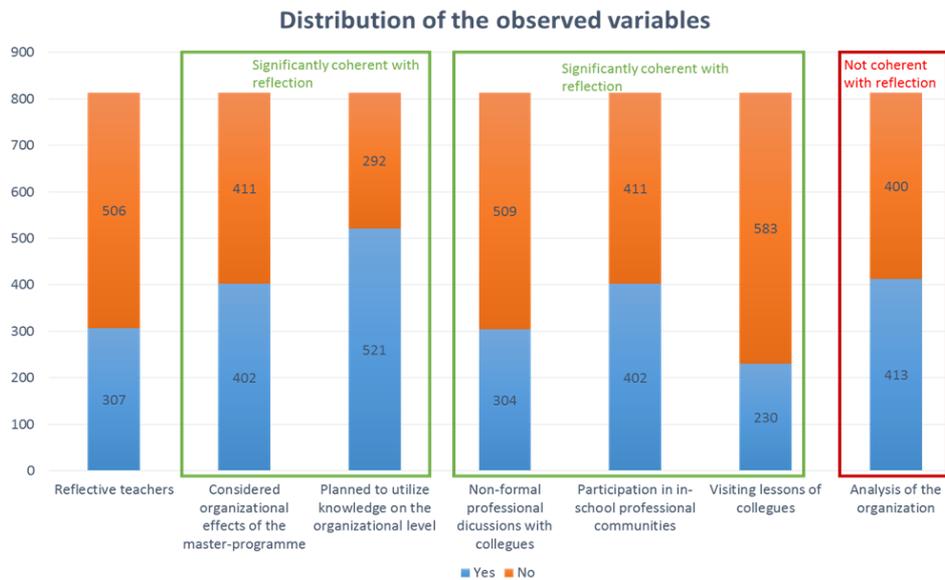


Table 1
Distribution of variables

DISCUSSION

Interpretations

The results of our observations supported our hypothesis about reflective thinking being in significant coherence with the development of organizational knowledge in master-programs. The relatively low number of teachers with reflective practices seems to coincide with what previous studies have found out about reflective practices of Hungarian teachers (Szivák and Verderber, 2016). We have found that organizational learning can be enhanced through reflective thinking of individual teachers, as they are significantly more likely to share their professional knowledge with others in their own organization.

Reflective thinking has already been interpreted as an important catalyst of professional learning (Schön, 1983; Taggar-Wilson, 2005; Szivák, 2014). Since it is also known that the role of reflective thinking is crucial in autonomous forms of learning, such as horizontal learning, understanding this connection is even more elemental. When we observed different forms of horizontal learning in master-programs, we found that these also cohered with reflective thinking. We can interpret that connection as a sign of the two types of activities (reflective thinking and horizontal learning) sharing certain features that are expected to appear in the case of learning teachers. This common characteristic might be autonomy as both types of activities require practitioners to activate their already existing professional capital, using mainly their own judgement, or decisional capital. If we use the professional capital theory as an interpretative

framework for our findings, we might state that reflective thinking seems to act as an effective trigger that catalysis such use of human capital that enables learning, thus creating ideal circumstances for the utilization of decisional capital. This resonates well with findings of previous studies that had been carried out in Hungary about the connection between reflective thinking and professional capital (Szivák and Verderber, 2016). Apparently, reflective thinking has the potential to enable horizontal learning by accompanying it from the beginning till practical adaptation, which is an accepted characteristic of effective learning (Lee&Low, 2014).

However, the main hypotheses of this paper concentrates on the development of organizational knowledge and interprets horizontal learning as a form of not only individual, but organizational learning as well. Organizational knowledge can be enriched effectively through collaborative professional activities of individuals (Swan&Scarborough, 2001; Simonaitene, 2004) and, based on our findings, is accompanied by reflective thinking. It is worth noting that those activities that we considered forms of horizontal learning in the study appeared in the dimension of knowledge sharing in the master-programs, but the nature of collaborative learning allows us to interpret them as forms of learning as well, re-enforcing the idea that these two dimensions (CDP and knowledge sharing) are interrelated and reflective thinking accompanies both of them.

Reflective thinking also clearly cohered with considering organizational effects of the master-programs. This result, while strengthening the already important position of reflective thinking, draws attention to why reflective thinking entails much more than simple problem-solving. If we invoke the strategic-model of reflective thinking, we can see that reflection involves a contextual analysis of certain phenomena that occur during teaching. The strategic-model does not separate reflective thinking from the organizational context, instead, it incorporates it as a recognition of its importance. It also allows teachers to reflect on their own learning process while considering its organizational implications. The significant coherence between our variables shows that reflective teachers are more likely to consider the organization consequences of their own professional development, making it more possible to get embedded into their schools. Previous research has also found that teachers (would) favor and demand organizational support for their own learning (Rapos, 2016), a statement that brings us closer to understand why reflective teachers consider their organization when planning their learning. They seem to have realized its importance, which might be understood as a vital step towards effective learning.

Reflective teachers are also more likely to plan the development of organizational knowledge. While it explains their involvement in forms of horizontal learning, it might also point to the fact that they have realized how the success of individual learning and the development of organizational knowledge might be interdependent. The exact same conclusion can be reached if we consider how professional development and knowledge sharing form one strong unit. Applying the professional capital theory again, we might interpret reflective thinking as a 'bridge' between human and social capital, since reflective teachers tend to utilize the result of their own learning on an organizational level as well.

The part of our hypothesis about the same significant difference between reflective and non-reflective teachers in including an organizational analysis in their master-programs was not supported. This seemed to contradict our previous interpretations of the results, but once we observed the connection between organizational analysis and plans to develop organizational knowledge, we found a significant difference between teachers who included such analysis and those who did not. These results point towards the different levels of reflection. The lack of connection between reflective elements and organizational analysis indicates that master-teachers generally stayed at the technical level of reflective thinking, dealing mainly with their personal experiences while interpreting practical issues. This also resembles findings of previous studies in the Hungarian educational system (Szivák & Verderber, 2016). These results also shed light on whether the mere presence of reflective thinking might be an indicator of human capital being capable of becoming part of social capital. It might indicate that the results of different forms of horizontal learning remain separated, making it less likely to transfer knowledge to an organizational level, as knowledge sharing activities tend to be accidental and isolated and they do not necessarily comply with the characteristics of the organization. We can deduce that while reflective teachers have realised the importance of the development of organizational knowledge and the relevance of context in their learning, their reflective thinking has not stepped towards a more detailed and comprehensive analysis of their organization, risking that even though they were planning such organizational development through forms of horizontal learning, their knowledge might stay at individual level.

The complex system of theoretical connections between concepts of reflective thinking, horizontal learning and organizational knowledge had to be construed in the forms of different professional activities that teachers in the sample wrote about in their master-teacher programmes. Once we managed to build these activities into the different elements of our theoretical framework (shown in Figure 3), their role became visible in the complex and dynamic system. The correlation between reflective thinking and different learning practices attached to horizontal learning and organizational knowledge development has proven the hypotheses of these various concepts being tied together in case of actively learning teachers, reinforcing the characteristics of autonomous and responsible teachers being committed to professional development.

This paper also draws attention to how the theoretical issues relating to reflective thinking might be tackled. The problems of conceptualisation and the various definitions (Schön, 1983; Taggart&Wilson, 2005; Avis, 2010; Liakopoulou, 2012; Szivák, 2014) originating from differing perspectives could be interpreted as a danger of the term being used without limitations and without actual meaning. By connecting reflective thinking to other concepts of professional development and learning, our study could provide a possible theoretical framework which attaches stable meaning to the term. It also points towards the need to research the connections reflective thinking might have with further concepts to establish an even more compelling conceptual background.

Nevertheless, our findings point towards a growing need and professional interests in the development of individual reflective thinking. This conclusion may indicate the possible practical utilization of our study, as it suggests that individual reflective thinking can act

as a catalyst of organizational development in schools. While most systematic interventions that aim to develop schools today tend to concentrate on the organizational level (OECD, 2016), policy makers should not forget about the professional potential of individuals, as the improvement of certain skills of individual teachers might result in organizational development as well.

LIMITATIONS

The limitations of our research mainly derive from the fact that we only analyzed one document the applicants prepared as part of their master-teacher application. However, the master-programs offered the most comprehensive impression of the professional practices and plans of candidates. They were required to present how they might meet the expectations of the master-status in this document, so we can consider it as a reliable source of their professional profile. Still, other documents, such as the self-description of their teacher career, might provide further insights.

Our conclusions should also be understood as limited. It is worth remembering that applying master-teachers were explicitly asked to develop the national educational system through their professional practices. We can assume that this significantly influenced their approach to the importance of knowledge sharing activities. Although this fact might have caused knowledge sharing to be over-represented, it is highly unlikely that results about the role of reflective thinking might have become false. We should also be reminded that the creation of the master-teacher profile, being an intervention of the educational government, was also intended to modify teachers' practices. Thus, the results cannot be upheld to all learning and developing teachers, but they still might bear implications about teachers' learning in general.

IMPLICATIONS

The accentuated position of reflective thinking in teachers' learning and organizational knowledge development in itself should encourage and trigger further studies about the relations of these concepts. The importance of horizontal learning and how it contributes to the professional knowledge of the organization should also be observed. The special features and uniqueness of national educational systems make it inevitable to carry out these pieces of research in a national context, but they might also provide the possibility of international comparisons.

Using the results of this paper, we should turn our attention to the understanding of the connection between reflective thinking and horizontal learning even more, as the more intensive spread of reflective practices might enhance horizontal learning or even professional networking. The organizational support teachers need for professional development has been clear to researchers, but we are yet to understand how organizational practices can support individual reflection. We still need to observe the possible aspects of how horizontal learning contributes to the enrichment of organizational knowledge. However, the complexity of these issues, as it has been pointed out in this paper as well, would require a more comprehensive approach in research, one that could incorporate several dimensions of learning, including reflective thinking and organizational features as well. This would also require a more complex

application of the several theoretical models, using the different approaches to CPD, organizational knowledge and reflective thinking.

Our current findings could be modulated through deeper qualitative methods as these might have the capacity to provide a more thorough understanding of the dynamic connection that exists between individual and organizational learning, while also shedding light on how reflective thinking can catalyze both and act as a conceptualized channel between them. It would also be worth considering carrying out the same research with a different sample, concentrating on teachers in different phases (preferably earlier) in their careers. In the case of master-teachers, their experiences about the implementation of their 5-year master-programs and the possible changes these have triggered would also be a valuable source of information about organizational effects of individual learning and knowledge sharing.

CONCLUSION

One of the factors the effectiveness of education depends on is the actual effectiveness of teachers. As, presumably, there has never lived a teacher who experienced all possible events, phenomena and challenges of their profession, teachers need to be equipped with applicable strategies they can use to analyze, understand, and react to the ones that occur during their careers. However, the nature of these challenges might change from time to time, so they also need to be able identify possible learning paths, which could result in modified and more effective practices. It has also been established that teachers are strongly influenced by various systems surrounding them, including their school organizations. Most of their professional practices are realized in that context, learning included. Horizontal learning has become an integral part of teachers' development, indicating that the professional knowledge of their organizations and the methods it is shared are key aspects in their learning process. Their own development can be utilized most effectively if the knowledge they have gained becomes part of their organizations' knowledge. Reflective thinking has proven to be a strategy that accompanies both individual and organizational learning, making them more likely to be effective.

Our research has shown that these learning-related concepts are closely connected to each other, while acting as different elements of individual and organization learning as well. Through governing and regulating the professional learning process of individual teachers, reflective thinking acts as an indicator and promoter of organizational learning. It also allows individual teachers to interpret their professional development from the perspective of their school organizations and to attach their learning activities to others.

In this paper we argued that the appearance of reflective thinking in a key professional document of Hungarian master-teachers cohered with their plans and practices to utilize their knowledge on an organizational level. As a result of our analysis, we found our hypotheses supported, validating that reflective thinking can act as a trigger for organizational learning as well. We managed to uphold the crucial role of reflection in learning, drawing attention to the fact that the spread of reflective thinking could result in more effective individual and organizational learning, and thus, should be in the interest of all who are dedicated to creating a more effective educational system.

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