

The level of reflection in the professional development of pre-primary teachers

The presented study brings to the professional discourse a view on the reflection of pre-primary teachers in two phases of their professional development. The level of reflection was ascertained in the period of their study at the Faculty of Education (24) and then after a year of work in a kindergarten (6). The author first considers the necessity to develop reflective thinking among pre-primary teachers, which she has based on existing findings in the area. She presents the reflective model (Korthagen, 2011; Pířová, 2005), which she used in her research. The remaining part of the text deals with the methodology of the research and the findings that resulted from the data analysis. The results show that aimed support directed at reflection helps to develop higher levels of cognitive thinking and also points to the connection with using more effective strategies in pre-primary education.

Keywords: reflection, reflective practitioner, metacognition, mental operations, undergraduate education, pre-primary education, teacher in pre-primary education

Introduction

The model of a reflective practitioner has become a generally acknowledged model not only in the sphere of education but also in health care and the legal sphere. The so-called reflective practitioner uses higher levels of mental operations for critically considering situations and for expert decision making within their professional performance at their workplace (Larrivee, 2008; Pollard et al., 2008). Reflection is a cumulative process in which an individual reconstructs their knowledge in the context of the research findings in such a way as to realise their own processes more and more (thinking and acting), and to be able to become less dependent on external control (Marcos, Sanchez, Tillema, 2011).

Recently the attention of theoretical as well as research discourse has been more and more on the reflective skills of teachers in both Czech as well as foreign literature. A team of Spanish and Dutch authors (Marcos, Tillema, 2006), who carried out a meta-analysis of texts on the said subject pointed out that the majority of studies focused on determining either the level or type of reflection (e.g. Hatton, Smith, 1995; Zeichner, Liston,

1996), or ways of thinking (King, Kirchner, 1994; Baxter 2004). However, only a few of these studies had provided information on performing reflection and its use for improving teaching. On the other hand, it is becoming clear that the ability to reach critical reflection needs a longer time and effort. It is not only about practising techniques, but it is also necessary to interlink the practical experience and to take into account the personal attitudes, as well as social, institutional and political context (Fook, Askeland, 2006, pp 53; Pollard et al., 2006, pp 36-40). The considerable fragmentation in defining the process of reflection had been pointed out by other authors as well (Lazarová et al., 2014; Luttenberg, Bergen, 2008; Píšová et al., 2011).

There have been various approaches regarding the research into reflection. As a rule the research surveys focus on the teachers of primary or higher levels of education. The research into reflection in pre-primary teachers has been quite sporadic (Pihlaja, Holst, 2013; Syslová, Hornáčková, 2014). The results show that reflection often stays at the technical and practical level; only minimally does it reach the critical level. The technical level is usually the description of work, connected to the answer to the question of what is happening. On the practical level assessments arise of what is and what is not right. On this level the respondents are looking for the answers to the question "What is happening?" and "how is it happening". This is an analysis of phenomena in connection with social relationships or scientific theories (Farrell, 2004).

The discussion on the professionalisation of the teaching profession calls for changes in the curriculum of the preparatory education of teachers. This conception of preparation focuses on help and support in the individualised process of gradually "becoming a teacher", which is understood as gradually constructing and creatively becoming a member of the teaching profession on the basis of their own activities, experiences, searching and self-discovering in the role of the teacher on the basis of co-operation with other students as well as teachers (Spilková, 2004).

Reflection is, therefore, becoming a key strategy in the undergraduate programmes for teacher education. One of the most famous models is the Korthagen (2011) model of the ideal process of reflection development, which is linked with so-called teacher education. This approach develops in students their abilities to knowingly research their personal experiences gained in their pedagogical practice, classify them into further steps, search for contexts and substantiate them. The reason for this research is the effort to understand the thinking and behaviour of children and to be able to identify the consequences of one's own behaviours upon the development of a child. The process of becoming aware of one's own professional abilities lies in substantiating one's actions with the support of theoretical knowledge, generalising one's own personal experiences as well as placing them within the larger context (Syslová & Hornáčková, 2014).

Evaluation of the educational consequences, professional decisions and the discussion thereof are becoming a significant part of the education of the future (Pollard et al., 2008). It is the only way for the students to learn "via and from their experiences with the aim of gaining new understanding of themselves and/or their teaching" (Píšová et al., 2011, s. 43). Reflexion is becoming a building block of the professional development of teachers as a basis for continuous professional education (Finlay, 2008; Hatton, Smith, 1995; Schön, 1987; Korthagen, 2011; Shulman, 1987), which starts in the preparatory education.

Development of reflective skills as a part of pre-gradual preparation

The starting point for preparatory education at the Faculty of Education at Masaryk University is the concept of experiential learning (Korthagen, 2011), which within the period of three years undergoes several stages (Horká, Syslová, Grůzová, 2014). In the first stage a university teacher works with the experiences of the students, i.e. their pre-conceptions. In the following semesters he/she connects the experiences of students from their teaching practice in kindergartens with their reflection within the lessons at the faculty. The most commonly used tools are so-called group interactions in which individual reflection is stimulated. The results of researching their own actions, the analysis, interpretation, and evaluation thereof (in relation to the intended objectives), are always critically commented by the teacher.

In the fourth semester there are so-called supervision group meetings where the students present their educational efforts via a video recording. Part of the preparation of the presentation of their work is also working on a written self-reflection. The written reflections have become the subject of the first stage of the qualitative analysis.

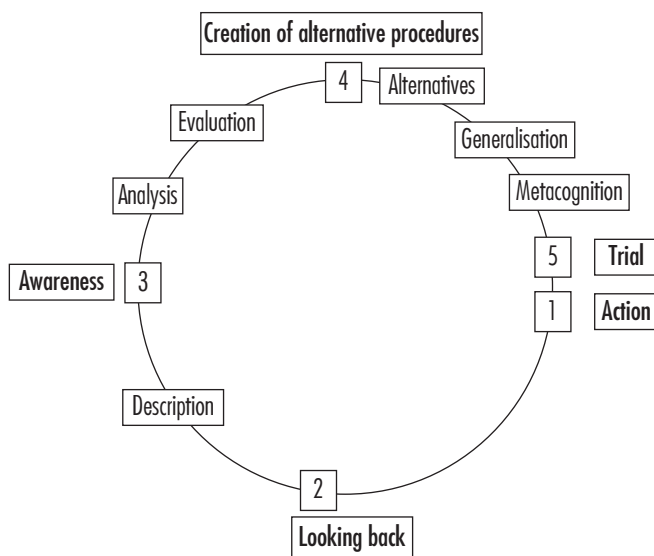


Fig. 1. The scheme of mental operations going on within reflection

Approaches to the development of reflective skills and their analysis are based on Korthagen's (2011) *model of the ideal process of reflection* (ALACT¹), which has been connected by the author with Pišová's (2005) *model of reflection expressed by mental operations* (Fig. 1). A teacher who regularly carries out reflection on his/her work and

¹ ALACT is an abbreviation of the individual stages of reflection (Korthagen, 2011, p. 58) – Action, Looking back, Awareness, Creation of alternative procedures and Trial.

who has been given support in the development of his/her reflective abilities can reach so-called metacognition (Loughran, 2007), which is an ability to recognize one's own cognitive styles and strategies, the starting point for planning and implementing more effective cognitive and auto-regulation (Boud, 2007; Krykorková, Chvál, 2001).

The qualitatively highest mental operation can be reached in the process of reflection only under the assumption that the subject uses all the mental operations in the constantly repeating stages of reflection (Příšová, 2005, pp 145):

Description is the objective recording of the phenomena, where the phenomenon is education reality. The basis of this is the interactions between the teacher and the child/children; however, it can be divided into partial areas such as aims, educational content, methods and forms, etc. It is a basic mental operation, the quality of which determines the quality of all the other stages of reflection. In other words if the description is not of sufficient quality there cannot be awareness of the real level of one's own professional skills.

Analysis means analysing and researching more complex realities by breaking them up into more simple ones. It is the ability to divide educational reality into simple parts, e.g. using questions like: "What did I do and why? How did the child/children react? What was the situation about? What was the aim of the situation? etc." There is an assumption regarding the ability to identify (describe) unambiguous facts.

Evaluation is the state of one's being aware of the causes of the identified phenomena, or it is the explanation of the causes of the discovered problems or successes. Evaluation is the sign of understanding the educational reality, which presupposes extensive theoretical knowledge as well as personal capabilities enabling the person to be sincere to themselves. It means that the evaluated person takes a position regarding themselves – either positive or negative, looking for the answer to the question "Why?" For example, Why did I act this way? Why did the children react that way?

Proposing alternative procedures presupposes that the teacher has managed the previous levels of mental operations and that he/she has had enough theoretical knowledge as well as practical experience to be aware what action could be more efficient, or what changes could support educational results of a higher quality.

Generalisation in its basis a confrontation of one's own opinions with the opinions of experts, e.g. authors of professional texts or university teachers. In other words generalisation can be also designated as a capability to formulate more general principles on the basis of one's own experience with educational reality.

Metacognition is thinking about mental processes. It is also the ability to recognise how we react in stressful situations; where we prefer emotions to sense. Metacognition focuses especially on assessing the decisive processes, which means that the teacher is learning via this mental operation how he/she solves problems, reacts and decides. This self-knowledge leads to a better efficiency via auto regulative processes. Metacognition could also be described as an ability to predict certain mistakes and limits of the human mind with the aim of avoiding them or finding ways to get over them. It can be referred to as self-reflection.

Methodology of the research

The level of reflection was researched in the course of the preparatory education in students of the 4th semester of the Bachelor study programme for Pre-school Teachers at the Faculty of Education at Masaryk

University in Brno (2011) and, subsequently, in the same respondents a year after they had graduated or a year after they started working in a kindergarten (2013).

The research sample consisted in the 1st phase of 24 students of the 2nd year of the Bachelor study programme for Kindergarten Teachers and in the 2nd phase 6 respondents from the original research sample. There were several reasons for the significant decrease in the number of the respondents. The first reason was the quite high percentage (approx. 30%) of students who did not finish their studies at the Faculty of Education at Masaryk University in Brno in the said field. Another narrowing of the number of the respondents was caused by the lack of availability of kindergartens where they were teaching. The research was implemented only in the South Moravian region; however, the students in the field of study were from other regions in the Czech Republic as well.²

The research design was a qualitative one. It combined the analysis from the video recordings of a morning educational programme (approx. 1 hour) and text analysis and semi-structured interviews and their mutual comparison. The video recordings were analysed on the basis of the categories created according to the Framework of the professional qualities of a kindergarten teacher focusing on the support of children's learning. There were the following categories (1) supports cooperation among children, (2) gives space for the children's expression of their own experience, opinions and ideas, (3) supports the efforts of a child and supports him/her, (4) provides feedback to the children, (5) supports children in independent problem-solving, (6) expects the rules of being together to be kept, (7) monitors the children, (8) others. In each of the categories there was a definition of the demarcation of the content, a description from the point of view of the observer, typical verbal cues and active verbs, a commentary, and so on, which enabled easier classification into a specific category. For ensuring reliability the video recordings were coded in the beginning by two researchers until an agreement was reached (0.78 Cohenova kappa) as well as the creation of the final version of the categorial system.

For coding the interviews we used the Pířová (2005) categorial system. The categories were based on the mental operations (Bloom, 1956), which could be seen in the reflections of the teachers (table 1). The individual interviews as well as their results were, subsequently, subjected to analysis from the point of view of the conformity as well as differences in comparison regarding the results of the video recordings analysis.

The aim of the presented research study was:

1. To find out the changes in reflection in the course of time.
2. To find out what the relations between the level of reflection and the quality of the professional skills of a kindergarten teacher are.

The results of the data analysis and the interpretation thereof

The results of the data analysis will be presented chronologically from the point of view of the individual stages of the research. The results of the self-reflection analysis in the 1st stage of the research, i.e. in students of the Bachelor study programme for Kindergarten Teachers are summarised in table 1.

² The Czech Republic is divided into 14 regions, wher Bmo is the South Moravian region. The faculty in Brno has been studied by students from 10 regions besides 4 Czech. This informations were ascertained from the self-evaluation report from the year of 2012.

Table 1. The summary of the results of the analysis of students' reflection (2011)

	Description	Analysis	Evaluation	Alternatives	Generalisation	Metacognition
Number of the respondents	19	12	18	22		

The table with the summary shows what the mental operations that the students were using in the written self-reflection were. A clear disproportion in the lower mental operations can be seen (analysis), which could have been presupposed as a preceding level to the higher ones. In some reflections the description was completely missing and there was no respondent that would get to the highest levels of mental operations, i.e. generalisation and metacognition.

The students' self-reflection mostly corresponded with the reality they had seen (on the video recording). Only occasionally was there uncertainty in the expression of the student (*I was uncertain when teaching the song whether to first sing the song to the children without the actions. However, I think that it is more attractive for the children to present the song with actions immediately*).

The summary served for selecting the results of the respondents (table 2), who continued in the research in 2013.

Table 2. The results of self-reflection analysis of selected (2011)

Teacher	Description	Analysis	Evaluation	Alternatives	Generalisation	Metacognition
U1	X		X	X		
U2	X	X	X	X		
U3	X	X	X	X		
U4	X		X			
U5	X	X	X	X		
U6	X	X		X		

Among the selected students who continued in the research 2 years later it can be seen that only half of them had slowly gone through all the stages to the level of Alternatives. From the horizontal point of view we can say that it is positive that most of the teachers were able to propose more efficient strategies that could be used for reaching the aim. It proves that regular discussions showing the students that there were always possibilities to find other solutions led the students to think over the possibilities and more effective approaches better.

There were two students who had not used analysis of the given situation, however, they had evaluated their work as well as the influence upon the children in harmony with the reality and they were looking for more efficient ways. Nonetheless, for the moment it was without the support of theoretical knowledge.

In some of the statements we were able to see several categories at the same time, e. g. Description connected with the analyses or evaluation connected with a proposal for an alternative solution. That is why we are presenting below at least the quotes that illustrate the individual categories.

Description:

The children had access to paper, coloured paper, watercolours and coloured pencils. They drew (or copied) the shape of an animal. They tore up pieces of coloured paper, which they crumpled into small balls and stuck onto paper. They repeated this until the animal was finished. After doing this they could finish it by colouring it with either watercolours or coloured pencils.

Analysis:

I noticed in the video recording that I often passed the children things, which they could have done themselves.

Evaluation:

I tried to prepare a sufficient introduction to motivate the children, but when I watched the video recording I noticed that my introduction was not sufficient.

I think that I didn't choose the activity properly. Furthermore, I prepared it as a strongly directed activity. There was a lot of interference. I allowed only a small space for the children's imagination and I didn't give them almost any feedback.

Alternatives:

Some materials were not really suitable (e.g. fabric) – it is necessary to think it over more in advance, what is the material that the children will be able to create from or how I can get it ready for the work in advance (cut into smaller pieces ...).

In the future I would like to talk at a slower pace, express more enthusiasm for the children's ideas, give more concrete feedback, avoid the word superb when evaluating and let the children solve their problems independently and to come with my solutions immediately.

In the 2nd phase the data from the graduates were analysed 2 years after the 1st phase (table 3).

Table 3. The level of reflection from the point of view of mental operations (2013)

Teacher	Description	Analysis	Evaluation	Alternatives	Generalisation	Metacognition
U1	X		X		X	X
U2	X	X	X	X		
U3	X	X	X	X		X
U4	X	X	X			
U5	X	X	X	X	X	X
U6	X	X		X		

If we look at the table in the vertical direction we can see that only one teacher managed to fulfil all the categories and three other teachers got up to the threshold of metacognition. Half of the teachers fulfilled only three, i.e. half, of the 6 categories. Here we again quote the students to illustrate better the individual categories.

Description:

And because we were starting the children created the skeletons according to the book. I gave them spatulas from ice lollies, and dark paper so that it would be nicely visible. They had the books on the human body and encyclopaedias at their disposal and were trying to create a human body.

Analysis:

For example I was walking there and it occurred to me that I really should focus on lowering my body; that when I was talking with a child, I was only at my level, i.e. standing, that it had to be unnatural for the children that they had to look at me from below.

Evaluation:

All the time we had the feeling that there would be a problem and then I started to think that it was already all right. And then when I saw it on the video, that we may be had already got used to her language, that we had started thinking that it was all right. However, on the video I saw that it had not been all right.

Alternatives:

Then I realised that it had really been new for them. Maybe I should have done it another way round. First, I should have let them try and then do the skeletons.

Generalisation:

I have a problem in communication with the children, e.g. when there is a problem I try to solve the problem for the children. I do not give the children the opportunity to express themselves. I noticed a moment when they had been playing with building blocks, they had been building and then there had been an argument and I had had the tendency to settle it as soon as possible, a kind of unrest. That was it, of course, I had settled it. Even though I know that I sometimes hold my tongue and ask, "How would you solve it yourself?" However, I know that this kind of conversation in my case is still a problem.

Metacognition:

When I was starting with effective communication, in fact we had learnt about it here (note: meant at the university). We tried it in the teaching practice, but I have to say that at the beginning I had a kind of feeling that it could not work at all. In some situations I was saying to myself that in those it was not possible. For example, I think that I have made progress, that I have been using more effective communication more than in the beginning; maybe also because I had been going through the situation again in my head, how I could have said it differently.

It is again clear that the teacher (U1) was using the hierarchically higher mental operations without using the lower ones (without the previous use of analysis). This finding can be interpreted by the fact that the teacher clearly had not expressed some of the mental processes aloud.

In comparing the results of the analysis of the video recordings we can state that the reflection was usually in harmony with the reality and that the teachers were reaching very good results from the point of view of

supporting the children in their learning. The educational activities had been organised as group work, not frontally, which had led to a higher activation of the children, their cooperation and mutual communication. The learning has been linked to real life situations, they had often encouraged the children and there had been clear effort in providing feedback.

When comparing the results from the point of view of the 2 year interval there has been a visible shift in the reflective skills of the 3 students. In 2 cases the 4th level was missing; these respondents evaluated their work as efficient, fulfilling the selected aims, which is why they had not been looking for any alternative solution.

The findings in the first phase show that the consistent support of reflection can help in creating professional skills of teachers targeted at the individual development of the personality of a child.

Conclusions and discussion

Mental operations are mutually dependent and they, in fact, create a kind of hierarchy in reflective skills. This means that by regular "looking back" at one's own experience (in the beginning with support) the teacher (student) is learning to think about his/her own actions, to name the educational reality, analyse his/her approach, evaluate his/her intentions, their implementation as well as the results of his/her work. In this constantly repeated process the teachers reflective skills are developed to the level of metacognition, which enables the teacher to regulate his/her thinking and action regarding the planned aims.

This research study aimed at finding how the level of reflection is changed in the course of time, and what the relation of the level of reflection and the quality of professional skills of a kindergarten teacher are. The level of reflection was evaluated on the basis of the sequence of cognitive operations, which had been identified in the respondents' statements and which had been compared with their performance in their work with children.

The findings from the 1st phase of the research show that most of the students had reached the 4th level of mental operations already during their study. Nonetheless, it had still been only the practical level, which had lacked critical consideration with the theoretical background mainly regarding the relation to the development of the child's personality. In other words their assessment was lacking in the deeper analysis of their approaches regarding the selected aims and, subsequently, the impact on the development of the individual children. A similar piece of research (Syslová, Hornáčková, 2014) has shown that teachers who have only attained secondary school level education, despite having more experience, frequently stay at the technical level of reflection. That is to say that the practical level of the respondents can be considered to be very good.

The critical level of reflection could be seen only in the 2nd phase and only in one half of the respondents. These respondents have shown that they had been provided with systematic support in the form of mentoring mainly from the head teachers of kindergartens. These were the faculty kindergartens and their work had been evaluated by the Czech school inspection as outstanding.

The respondents were able to argue their professional performances regarding the performances of the children with the support of the Framework Educational Programme for Pre-primary education. The analysis of

the video recordings showed that the skills of the respondents were aimed at anticipating the events in the classroom and more long-term planning (in wider contexts). Their decision-making was targeted at the development of children's personalities.

There can be several reasons for the insufficiently developed cognitive skills of the 3 other teachers. For example, there may have been insufficient work with the pre-conceptions of the students in the preparatory undergraduate education. It may also be their personal temperament (King, Kirchner, 1994) which lowers their abilities for reflection. A further possible explanation might be the insufficient support in their workplace, which leads to them focussing on their day-to-day problems and not to research into their work quality.

This shows that support for reflection is a significant part of the undergraduate education of teachers. However, it will be necessary to work with it in a much more systematic way, especially in relation to the individual students' pre-conceptions. The results of the interviews also show that the level of reflection is influenced by the support of the novice teachers at their workplace, but also the quality of education that the kindergarten provides. The research study into novice teachers via focus groups (Syslová, Horká, Lazarová, v tisku) shows that kindergartens provide novice teachers with varied levels of support, usually not very high.

The suggested career hierarchy, which is currently in the pilot stage, could help with the development of professional skills including the ability for self-reflection. The main idea was to support mentoring at schools. Experienced teachers, so-called experts, should provide support in the role of a mentor not only to novice teachers but also to those who are trying for better work performance and a better position at a higher career position.

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Streszczenie

Poziom refleksji w rozwoju zawodowym nauczycieli przedszkola

Zaprezentowane badanie wnosi do profesjonalnego dyskursu pogląd dotyczący refleksji nauczycieli przedszkola w dwóch etapach ich rozwoju zawodowego. Poziom refleksji badano podczas ich studiów na Wydziale Edukacyjnym (24), a następnie po roku pracy w przedszkolu (6). W pierwszej kolejności autorka porusza temat potrzeby rozwoju myślenia refleksyjnego nauczycieli przedszkola, opierając się na wynikach wcześniej

zrealizowanych badań w tej dziedzinie. Przedstawia model refleksji (Korthagen, 2011; Píšová, 2005), który wykorzystwała w swoich badaniach. Pozostała część tekstu poświęcona jest metodologii badań oraz spostrzeżeniom, które wynikają z analizy danych. Wyniki wskazują, że ukierunkowane wsparcie refleksji pomaga rozwijać wyższe poziomy myślenia kognitywnego.

Słowa kluczowe: refleksja, refleksyjny praktyk, metapoznanie, operacje myślowe, studia licencjackie, edukacja przedszkolna, nauczycielka przedszkola