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INDEPENDENT LEARNING AND REFLECTIVE THINKING OF THE FUTURE TEACHERS

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Abstract

The paper aims to achieving an exploratory and correlational study between independent learning and reflective thinking of the future teachers. For the substantiation of this study, analysis of the specialized literature were made. The independent learning involves a high level of self-awareness, the development of cognitive and metacognitive abilities and, in the same time, it involves the self-regulating personal effort to learn (Ştefan, 2010). Reflective thinking, on the other hand, has benefits for learning as it assists in integrating theory with practice, promotes intellectual growth because it is cyclical rather than linear, develops skills that makes students more confident, more independent and fosters responsibility and accountability (Kuiper and Pesut, 2004). Thus, basing on the theoretical data as mentioned above, the aim of this study is to identify the level of the development of independent learning and of the reflective thinking of students, as future teachers. Also, we identify existing correlations between independent learning and reflective thinking. The sample of subjects involved in this study is comprised of students in pre-service teacher education (N=212), which are studying the program for teacher training (I-st year). To measure independent learning we used the shortened version of the AILI questionnaire (Elshout-Mohr, Van Daalen-Kapteijns, & Meijer, 2004). On the other hand, reflective thinking was measured by QRT questionnaire (Questionnaire for reflective thinking, Kember et al., 2000). Data obtained were statistically descriptive analyzed by calculating means, and Pearson *r* correlation coefficient.

Keywords: Independent learning; reflective thinking; self-awareness; future teachers; correlational study.

1. Introduction

Skills of lifelong learning became necessary because postmodern society is characterized by an explosion informational and rapidly and uncertain changing realities, requiring learners to rethink constantly strategies, to change directions, to apply the new knowledge to complex situations in their daily activities. Instruction has therefore become concerned more with enabling students to learn how to learn, independently face challenges and create new realities than with information delivery (Shawer, 2009). Then it is important to promote reflective thinking during learning to help students develop high-level thinking skills, to link new knowledge to the foregoing, to apply specific strategies to new tasks and, understand their own thinking.

In this context, higher education of teacher training aims to develop independent learning and reflective thinking, which will provide preparing students for a high quality career. Independent academic learning emphasizes personal development of students, responsibility and commitment which increases steadily throughout the academic years. However, independent learning is a complex, continuous, and leasting. This goal is the responsibility of the teacher, but also of each individual student, as a partner in the instruction activity. Gradually, as the maturation and evolution of knowledge and practice, the student assumes responsibility for learning, self-monitoring and self-route of their academic own way, including the level of individual study.

2. Paper Theoretical Foundation and Related Literature

In recent years, the promotion of **independent learning** has become an important educational goal in many educational systems. Came from the constructivist learning theory, the concept of independent learning is not new, but is it one on which there is a surprising lack of consensus as to what it means (Broad, 2006). There are a number of different terms used to describe independent learning, such as *self-regulated learning* (Schunk & Zimmerman, 1994; Pintrich, 2000), *self-directed learning* (Korotov, 1992), *learning to learn* (Black et al., 2006), *student-centred learning* (Black, 2007), *self-learning* (Mok & Chen, 2001), *self-access learning* (Chia, 2005) etc. These themes and processes involve students having an understanding of their learning, taking over responsibility for their learning and working with teachers to structure their learning environment. This allows students to become active participants in their own learning process. In short, confusion exists due to the number of terms and possible interpretation of those terms (Broad, 2006).

The terms *self-directed learning* and *learning how to learn* are sometimes used interchangeably with independent learning (Meyer et al, 2008). The most common descriptor of independent learning is *self-regulated learning*. The literature consistently notes that independent learning is fostered by creating opportunities and experiences that encourage learner motivation, curiosity, self-confidence and self-reliance, and is based on the understanding by learners of their own interests and a valuing of learning for its own sake (idem).

In this paper we use the term *independent learning* to designate a type of learning and studying that is directed by metacognition. The literature in the area of metacognition identifies three distinct aspects of independent learning directed by metacognition: *metacognitive knowledge*, *metacognitive regulation* and *metacognitive responsiveness*. *Metacognitive knowledge* refers to the knowledge or beliefs about what factors or variables interact and in what ways to affect the course and outcomes of cognitive enterprises (Flavell, 1979). *Metacognitive regulation* refers to a set of cognitive approches that help students control their learning. A component of metacognition that has received relatively little attention concerns metacognitive experiences described as any conscious cognitive or affective experience that accompanies and pertains to any intellectual enterprise (idem). The term *metacognitive responsiveness* include students' sensitivity to metacognitive experiences (idem); general awareness of metacognition and the importance thereof; and curiosity to learn about metacognition by information and feedback.

Developing students' **reflective thinking** has been recognized as an essential goal for learning and transformation in higher education. Students are expected to reflect as a part of their studies, but also to reflect on their learning and development of skills. Reflective thinking can be seen as a fuzzy construct because there has been no clear common definition, roles, or process of reflective thinking in students learning making it is difficult to distinguish reflective thinking from other thinking skills such as metacognition. Moon (1999) points out that reflective thinking has been initiated or guided differently or used and applied for different purposes in a variety of fields of education. However, many researchers from diverse traditions and perspectives argue that reflective thinking is an important skills or cognitive behavior that should be developed in students (Dewey, 1933; Ertmer & Newby, 1996). Thus, Bourner (2003) notes that developing students' capacity for reflective learning is part of developing their capacity to learn how to learn. Dearnley and Matthew (2007) report that the awakening process, facilitated through reflection, is crucial in moving students from a state where they begin to question received knowledge and begin to think independently. Harrison et al. (2003) contend that reflection is an important human activity and is an essential element of the learning process that allows students to evaluate their personal strengths and weaknesses and runs parallel with metacognition. They go on to report that reflective thinking is the essence of metacognition and claim that reflection promotes self-learning and self-reliance, reinforces and consolidates learning, and promotes learner responsibility. Therefore, a constant concern of teachers should be to stimulate students to reflect on their learning process so that they become aware of their strengths, but also about their weaknesses, which they can compensate by personal ways to explore the information through personal management of information and knowledge, and thus effectively managing their knowledge (Peculea, L., 2015).

Mezirow's (1991, 1998) theories regarding transformative education, has involved the theoretical postulation of reflective thinking as being categorised into four separate phases, in their order of complexity – habitual action, understanding, reflection, and critical thinking (Kember et al., 2000; Leung & Kember, 2003; Phan, 2007). Habitual action is a mechanical and automatic activity that is performed with little conscious thought. Understanding is learning and reading without relating to other situations. Reflection concerns active, persistent, and careful consideration of any assumptions or beliefs grounded in our consciousness. Critical thinking is considered as a higher level of reflective thinking that involves us becoming more aware of why we perceive things, the way we feel, the way we act, and what we do.

The work of Leung and Kember (2003) has provided us with a clear understanding of critical thinking and how it relates positively to other motivational variables, notably - learning styles, goal orientations, self-efficacy beliefs, and effort. Leung and Kember's confirmatory factor analysis (CFA) study suggests that critical thinking along with reflection and understanding are associated positively to deep study strategies, whereas habitual action is more in line with surface study strategies. It found from structural equation modeling that habitual action is predicted by surface processing strategies, whereas understanding is influenced by deep processing strategies. Critical thinking and reflection are also influenced by deep processing strategies (Phan, 2006, 2007). Prior study results indicated the positive impact of reflective thinking on learning achievement (Ersozlu & Arslan, 2009). The Phan (2007) study empirically verified the causal effects of reflective thinking and self-efficacy on academic performance and the necessity of encouraging students to think reflectively during learning processes.

3. Methodology

3.1. Participants

A number of N = 212 participants was involved in the research conducted. The sample of subjects was comprised of students in pre-service teacher education which are studying the program for teacher training , I[st] year, in the academic year 2015-2016, at Technical University of Cluj-Napoca.

3.2. Research Design

To explore the independent learning and the reflective thinking of the future teachers, it was realized an exploratory and correlational study design which aimed to identify the level of the development of this variables and also the correlation established between them. The research questions of the study were the following*: (1) What is the level of the development of the independent learning and the reflective thinking of the future teachers involved in the research? (2) What is the correlation established between the dimensions of the independent learning (metacognitive knowledge, metacognitive regulation and metacognitive responsiveness) and the dimensions of the reflective thinking (habitual action, understanding, reflection, critical reflection)?*
Data obtained were statistically descriptive analyzed by calculating mean, standard deviation and and Pearson correlation coefficient, using IBM SPSS™ software.

3.3. Measures

In order to measure the independent learning we used the shortened version of the AILI questionnaire (Elshout-Mohr, van Daalen-Kapteijns, & Meijer, 2004) which consists of 45 items which measure three dimensions of the independent learning: metacognitive knowledge, metacognitive regulation and metacognitive responsiveness. On the other hand, reflective thinking was measured by QRT questionnaire (Questionnaire for reflective thinking, Kember et al., 2000), which consists of 16 items. This is a tool built on four scales measuring four constructs: habitual action, understanding, reflection, critical reflection.

3.4. Procedure

In the research were involved only those students who participated in more than 75% of courses and seminars and were excluded those who had a low attendance.

A paper and pencil version of the questionnaires, was distributed and completed by participants in the faculty environment, without interfering with the formal didactic activities. To the participants were explained that their participation in the study is voluntary, and their consent was completed in the questionnaire.

4. Results

Aiming to identify the development level of the independent learning and of the reflective thinking of the future teachers involved in the research, it was resorted to calculate the means for the each dimension of these. The data obtained are shown in Table 1 and Table 2. Analysis at the level of observed scores on subscales, for each variable followed, showed a medium development of the independent learning but also of the reflective thinking. The only lowest mean was found at the level of metacognitive responsiveness.

Table 1. The development level of the independent learning

Dimensions of the independent learning	N	Mean	Lower	Higher
Metacognitive knowledge	212	4.26	1	7
Metacognitive regulation	212	4.06	1	7
Metacognitive responsiveness	212	3.82	1	7
Total		**4.04**		

Table 2. The development level of the reflective thinking

Dimensions of the reflective thinking	N	Mean	Lower	Higher
Habitual action	212	3.03	1	5
Understanding	212	3.76	1	5
Reflection	212	3.80	1	5
Critical reflection	212	3.30	1	5
Total		**3.47**		

In order to identify possible correlations between the independent learning and reflective thinking, our analysis has focused on the correlations between the scores for the each dimension of these. For this analysis it was used the calculation of the Pearson correlation index *r*. We considered necessary to emphasis the correlations between observed scores on each dimension because it can be more relevant

compared to the correlations between the scores for the full scales. Thus the results can be more conclusive for our research aim.

Table 3 shows a significant positive correlations between three dimensions of the reflective thinking (understanding, reflection and critical reflection) and the dimensions of the independent learning. We have not identified significant correlations between habitual action (as dimension of the reflective thinking) and the dimensions of the independent learning.

Table 3. The Perarson correlation established between the dimensions of the independent learning and the dimensions of the reflective thinking

Dimensions of the reflective thinking		Dimensions of the independent learning		
		Metacognitive knowledge	Metacognitive regulation	Metacognitive responsiveness
Habitual action	Pearson correlation	.124[**]	.071[**]	.096[**]
	Sig. (2-tailed)	.249	.374	.429
	N	212	212	212
Understanding	Pearson correlation	.873[**]	.836[**]	.596[**]
	Sig. (2-tailed)	.000	.000	.000
	N	212	212	212
Reflection	Pearson correlation	.624[**]	.896[**]	.769[**]
	Sig. (2-tailed)	.000	.000	.000
	N	212	212	212
Critical reflection	Pearson correlation	.798[**]	.776[**]	.685[**]
	Sig. (2-tailed)	.000	.000	.000
	N	212	212	212

** Correlation is significant at the 0.01 level (2-tailed).

5. Discusions

The aim of this study was to identify and to analyze the development of the independent learning and of the reflective thinking of the future teachers, but also the relations established between them.

Regarding the first research questions of the study: *What is the level of the development of the independent learning and the reflective thinking of the future teachers involved in the research?*, the analysis of the participants' responses, as presented in Table 1 and Table 2, shows that the development of the independent learning and of the reflective thinking of the future teachers is, generally, positive.

On a Likert scale with 7 points, used for research, it appears that the *independent learning* of future teachers have an mean M = 4.04, which means an medium development. Moreover, the research results show an medium development of metacognitive knowledge (M = 4.26) and of metacognitive regulation (M = 4.06). These results lead us to say that a medium development of metacognitive knowledge and of metacognitive regulation ensure the premises for students, as future teachers, to be independent learners which involves to be metacognitively aware of their cognitive process and to monitor, to analyze, and to evaluate their learning processes and performance. It is noted that, as we presented in Table 1, there is an lower mean of the development of the metacognitive responsiveness (M = 3.82). This result can be interpreted as there are a low sensitivity to external feedback but also to internal feedback during a learning episode. So, there are a low development of the affective experiences,

of the future teachers, that accompany and pertain to any intellectual enterprise. I this regard it becomes important the transition from the cogntive dimension to its integration with the affective and the behavioral one. Therefore, the goals pursued under the initial and continuous training of teachers subsystems, must consider cyclical and spiral processuality implied by adequate attitudes formation (Andronache et. al, 2014).

On a Likert scale with 5 points, it appears that the *reflective thinking* of future teachers have an mean M = 3.47, which means an medium development. But, also for this variable, our analysis sought to identify the scores for each dimension. Therefore, the results show an medium development of habitual action (M = 3.03), understanding (M = 3.76), reflection (M = 3.80), critical reflection (M = 3.30). These results suggest us that a medium development of the reflective thinking, of the future teachers, involve skills to conduct automatic activity, wich is performed with little conscious thought. Also, the results lead us to say that the future teachers could be active, persistent, and able for a careful consideration of any assumptions or beliefs grounded in the consciousness. So, it is expected that the future teachers to reflect, as a part of their studies, but also to reflect on their learning and their skills development.

Regarding the second research questions of the study: *What is the correlation established between the dimensions of the independent learning (metacognitive knowledge, metacognitive regulation and metacognitive responsiveness) and the dimensions of the reflective thinking (habitual action, understanding, reflection, critical reflection)?,* the results presented in Table 3 show significant correlations between understanding and metacognitive knowledge, metacognitive regulation and metacognitive responsiveness (*r = 0.873, p <0.001; r = 0.836, p <0.001; r = 0.596, p <0.001*). Thus, based on these data, we can say that a higher understanding of the future teachers involves a higher metacognitive knowledge, metacognitive regulation and metacognitive responsiveness. The next highest correlation are between reflection and metacognitive knowledge, metacognitive regulation and metacognitive responsiveness (*r = 0.624, p <0.001; r = 0.896, p <0.001; r = 0.769, p <0.001*). Therefore, the future teachers who have a higher development of the reflection have also a higher development of metacognitive knowledge, metacognitive regulation and metacognitive responsiveness and vice-versa. An other significant correlation was identified between critical reflection and metacognitive knowledge, metacognitive regulation and metacognitive responsiveness (*r = 0.798, p <0.001; r = 0.776, p <0.001; r = 0.685, p <0.001*). These data led us to an other important conclusion, thus we can say that the critical reflection of future teachers is significantly and positively associated with metacognitive knowledge, metacognitive regulation and metacognitive responsiveness.

Lower and no significant correlations (*r = 0.127, p >0.001; r = 0.071, p >0.001; r = 0.096, p >0.001*) were found between habitual action and metacognitive knowledge, metacognitive regulation and metacognitive responsiveness. It can be a very important issue because the habitual action is more in line with surface study strategies, which can not be associated with metacognitive knowledge, metacognitive regulation or metacognitive responsiveness, which involves deep processing strategies. In fact, this conclusion is supported by other similar studies, for example Leung and Kember (2003) found from structural equation modeling studies, that habitual action is predicted by surface processing strategies.

6. Conclusions

The results obtained through this investigation suggest the necessity to assure:

- the development of future teachers's reflection in different academic contexts and, in the same time, the premises of it, assuring that the future teachers could be active, persistent, and able for a careful consideration of any assumptions or beliefs grounded in the consciousness;

- the necessary associations between the critical reflection of future teachers and their metacognitive knowledge, metacognitive regulation and metacognitive responsiveness;

- didactical designs and the practical academic approches for all the psychopedagogical subject matters, in order to promote these transversal skills – critical reflection, metacognitive knowledge, metacognitive regulation and metacognitive responsiveness.

In conclusion, according to theoretical approaches and to statistical data obtained, it is worth mentioning that the formation and manifestation of the independent learning and of the reflective thinking of the future teachers is an systemic and an interactive process. Our paper tried to draw attention to the fact that the independent learning and reflective thinking is an important issue in teachers training, and their formation and development, can be produced by interaction, in a systemic way. Moreover, the development of the all dimensions of independent learning and reflective thinking facilitates a deep learning.

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