

# REFLECTION OF PRESERVICE TEACHER PROFESSIONAL PERFORMANCE FOR PROMOTING TRANSDISCIPLINARY LEARNING IN PRIMARY SCHOOL EDUCATION

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## ABSTRACT

The study aims to develop a well-structured and applicable instruction for teacher's self-reflection about their competence to effectuate transdisciplinary learning in primary school settings. Ten preservice teachers were asked to reflect on their transdisciplinary teaching practice in different ways. The content analysis of interviews helped to find out the categories, which provoked the most personally significant, professional and contextual reflections. These categories were structured in the experimental form of teacher's self-reflection for teacher education and further research.

*Keywords: transdisciplinary teaching and learning, teachers' professional performance, primary school education, self-reflection, metacognition.*

## Introduction

*Transdisciplinary teaching and learning* (TD) is becoming a significant topic/issue in Latvia today in the context of developing a competence-based approach in education. Principles of integrated transdisciplinary learning in primary education and contradictions of description and evaluation of competence in the Latvian educational environment are analysed in the authors' previous articles (Briška, Siliņa-Jasjukeviča, 2016, 2018, 2019). These studies found a dearth of available tools for evaluating the quality of TD and teacher's professional performance relative to it.

The problem is that competence, as with TD, is a complex phenomenon. It is challenging to evaluate it objectively and deeply at the same time, without losing any essential component. It is important for teacher education as well, in that it helps preservice teachers consider their teaching in categories

appropriate to the new curricula. (Self-reflection, as an essential component of a learning process, is a rather new topic in Latvian educational practice. It has become salient in the context of deriving competence-based curricula in general education and teacher education as well.

With the objective of developing and testing a tool for effective reflection and evaluation of preservice teacher's performance, a qualitative investigation was performed. Data were derived through semi-structured interviews. Ten preservice teachers, who are studying TD within their teacher education programme, were asked to reflect upon their TD teaching practice using their own words. The categories, which provoked the most personally significant, professional and contextual reflections of preservice teachers' TD teaching practice, were found through content analysis. These categories were structured in the experimental form for preservice teacher's self-reflection on their TD practice.

### **Aim of the Study**

The **aim** of the study is to develop an instructional tool for teacher's self-reflection within their TD practice. To do so, we sought to delineate the structure, key words, and sample questions that would help them describe and analyse their perceived competency in the organization of primary education TD – in a manner that is deeply held, professionally derived, and critically astute.

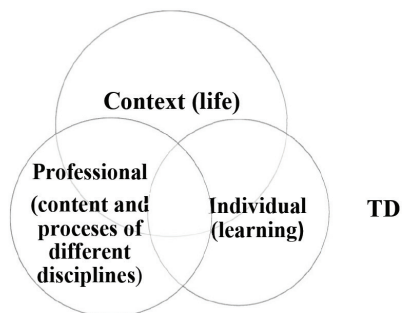
### **Materials and Methods**

#### **TD in primary education**

The praxis of TD, together with *multidisciplinary* and *interdisciplinary* approaches to teaching and learning, represent three related modes of integrated learning. All employ teaching more than one subject at a time, involve students as active learners, and claim to be more efficient for the learning process than the traditional, disciplinary (i.e., rote) approach. Each develops a different set of relations across the following three dimensions of sociocultural learning:

- Professional: accumulation of knowledge in particular field, solving complex professional tasks, productive, effective, and professional performance.
- Individual: development of learner's mental resources, i.e., individual abilities and skills (including high-level thinking; metacognitive and learning skills), and personal experiences.
- Context: life, world, events, society, culture, values, new situation, resolving the problem, etc. (Kron, 2004; TiĶa, 2008).

The focus of the multidisciplinary approach is primarily on the various disciplines involved: a teacher organises learning standards for those subjects – generally around a unifying theme. In the interdisciplinary approach to integration – beyond the academic content per se – students learn generic skills pertaining to collaboration, research, writing, communication – and, as well, design and construction. In TD approach, learners create innovative solutions to an actual problem by developing the content and tools of these various disciplines, applying interdisciplinary and disciplinary skills in a real-life context (Drake & Burns, 2004; Helmane & Briška, 2017). Learning becomes organic, meaningful, and transformative, altogether *holistic* as opposed to *mechanical* (Binder, Absenger-Helmli, & Schilling, 2015; Briška, Siliņa-Jasjukeviča, 2016, 2018, 2019; Kaufmann, Moss, & Osborn, 2003; Sterling, 2011). Unlike the other integrated teaching and learning approaches, the main focus in TD is on solving the real life problem; development of student’s professional knowledge and individual skills are dependent on, and in a sense, an outgrowth of it (Figure 1).



**Figure 1.** Components of TD

From this, it follows that optimal application of TD includes: (a) the resolution of a life-based question or problem (context of learning); (b) promoting the development of students’ basic skills and competencies; and (c) organisation of content of particular disciplines in response to the problem. These components serve as criteria for recognising, reflecting upon, and evaluating preservice teacher’s ability to perform TD teaching.

### **Preservice teacher’s self-reflection**

There are many examinations and analyses regarding the utility of reflection in professional activity. The findings derived through these research can readily be applied to teachers’ professional education. Despite the diversity of views within this literature, all authors agree

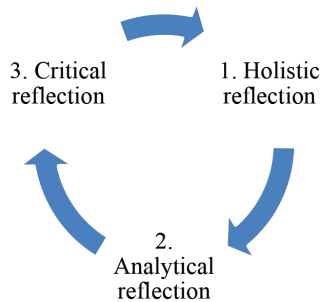
that reflection is a meaningful part of professional education. Reflection – together with theory, practice, and experience – is a component of experiential learning (Kolb, 1980; Griffin & Jarvis, 2006). It provides feedback by turning one's back to her/his personal experience and drawing attention to feelings and analysing and re-evaluating them in a range of different contexts (Rogers, 1961; Moore, 2000, 2004; Boud & Falchikov, 2005). Self-reflection is defined as an activity of thinking about one's own feelings and behaviour and the reasons that may lie behind them (Cambridge Dictionary, 2019). Mortari (2015) describes this process as 'a turning back on oneself', where the inquirer – at once – is both the observed and the active observer.

Schön (1987) distinguishes *reflection in action*, *reflection on action* (after action) and *reflection on reflection* (student's metacognition). Haton and Smith suggest three levels of reflection: (a) *descriptive* (student remembers and becomes aware of his/her activities, results, and feelings and presents them in verbal form); (b) *dialogic* (student analyses particular aspects of her/his performance); and (c) *critical* (student involves him-/herself in reflection about the broad range of contexts touched upon by the subject matter, e.g., historical, social, political, etc., considers/presents contradictions and problems arising therefrom, analysing her/his own reasoning and conceptions, and arrives at conclusions regarding what caused this or that problem) (Haton and Smith 2006). Griffin, Holford, and Jarvis distinguish between *critical* and *holistic* reflection, depending on whether it is rational, i.e., involving a broad context of social and cultural values or – in both contrast with and in addition to these aspects – also appreciates feelings in terms of an individual's personal experience (Griffin, Holford, and Jarvis, 2003). Moon analyses *superficial* vs. *deep and transformative* reflection, assuming that the latter plays an important role in more fulsome, contemplative, and reflective approaches to learning (Moon, 2013), such as represented by Klein, who distinguishes between a *mechanical* vs an *organic* mode of reflection. The first is analytical, linear, logical, and rational, involving deductive reasoning and metacognition; it is implemented frequently in teacher education curricula and evaluation processes with the aim of producing competent teachers (who can analyse and think critically about their professional activities). The alternative, more organic reflection enables teachers to think *contemplatively*, i.e., imaginatively about teaching – and, with that, develop discernment, see qualitative nuances inherent in teaching and, overall, be able to understand and navigate the complexities of classroom and school life with greater wisdom and clarity (Klein, 2008).

In various studies on teacher education, evaluations of the importance of descriptive reflection and its desirable content differ greatly. A number

of researchers (e.g., DiPietro & Walker, 2005; Patrick & Pintrich, 2001) propose that critical reflection is the highest level of reflection – alongside the technical evaluation of one’s pedagogical performance. Such models, however, pay scant attention to the student’s own experience. Hatton and Smith, for example, fail to consider assessment of the students’ emotional experience, which appears spontaneously as a part of the ‘description of the event’ (Hatton and Smith, 2006). In her own analysis, Fenwick contrasts Mezirov’s transformative learning approach – which involves identification of students’ beliefs underpinning her/his activities, comparing them with her/his experience of reality and ‘significant others’ views, and Boud and colleagues’ approach, which intends to evaluate the student’s experiences together with her degree of involvement in experience and the feelings that experience has caused by (Fenwick, 2003; Boud & Falchikov, 2005).

For the current research, a structure *holistic – analytical – critical* reflection was chosen to promote student’s sensitivity, openness, and personal involvement, on the one hand, and professionalism, complexity, contextuality, on the other.



**Figure 2.** Three levels of reflection

**1. Holistic reflection:** contemplating the process, noticing facts, seeing qualitative nuances, verbalising previously unnamed phenomena, articulating what was done, and what has happened in the process of action. The holistic approach to reflection is grounded in the belief that teachers are whole persons and teaching is multidimensional, including personal, ethical, spiritual, aesthetic aspects and complex and nuanced activity (Erlandson, & Beach, 2008):

Criteria: openness, authenticity, sensitivity of perception (Rogers, 1961; Bandura, 1997; Klein, 2008).

**2. Analytical reflection:** analytic, linear, logical, rational thinking, deductive reasoning, interpreting facts by identifying regularities and analysing them in a professional context.

Criteria: the use of professional terminology, theoretical justification, the ability to analyse situations.

- 3. Critical reflection:** evaluating the activities and learning in wider social and cultural contexts, and in relation to metacognition and justification of the situation and decision-making, according to different points of view. There is a relationship between critical reflection and transformative learning that can impact upon individual self-efficacy beliefs and agency. Agency occurs across social structures and cultures and can be linked with social cognitive theory (Pantić, 2015). Critical reflection can enable person to engage with dilemmas and to affirm or identify their values and what is meaningful in their practice (Gardner, 2009).

Criteria: diversity of points of view, awareness of individual, social and cultural values and one's responsibility to them.

Thus, in the instructions for reflection, each dimension of TD (context, subject content, development of individuality) must be reflected across three levels (Figure 2).

## Research design

In order to develop a tool for effective reflection and evaluation of preservice teacher's TD performance, qualitative research was performed. The study sample consisted of 10 randomly chosen preservice teachers, who study TD in their professional study programme and who agreed to be involved in the research. Data were collected in narrative interviews. Respondents were asked to reflect on their TD teaching practice immediately after having taught a class as part of their study practice. As specific questions were not offered, respondents had to choose the words, i.e., how to verbalize their experiences, activities and learning. Unstructured interviews served as a good opportunity for researchers to discover new ideas and unexpected points of view (Mayring, 2014).

Following this phase, content analysis of the interviews was performed. Units of meaning were marked, coded, generalised into meta-codes, and related to categories of TD. Typical major words, phrases, and expressions were collected in order to delineate holistic, analytical, and critical ways of reflecting on student teachers' TD practice. On the basis of these findings, an instruction for teachers' self-reflection on TD practice was developed (with a structure and set of sample questions designed to elicit personally significant and contextually-based reflection).

## Results

The data analysis revealed several patterns of teachers' self-reflection. The first expressions of respondents were emotional and spontaneous: *'The garden party at the end of school year was sincere, fun, attractive, unforgettable'. I was in doubt when I chose this unusual topic for learning'*. The naming of dominant feelings during practice, an emotional evaluation of the process in whole, can be evaluated as an index of holistic self-reflection. The first level of reflection expresses preservice teacher's perceptions, i.e., feelings, emotions, and expectations, and lets them identify the elements of teaching and learning in general. This finding fits with Klein's (2008) idea about describing/showing/naming, aspects of teachers' inner life in her/his professional practice by using such words as *bravery/courage, empathy, joy, hope, forgiveness, fortitude, generosity, imagination, inspiration, integrity, justice, kindness, love, mastery*. These qualities are not typically appreciated in teacher education and mostly are not included in teachers' professional standards; still, they are personally meaningful for students' experiences or easily recognizable in practice.

Below, respondents' narratives follow a range of different paths. They look for causes; make judgments about the consequences of choices they made; and analyse the learning process in context of the chosen life problem, i.e., the learner's involvement, their personality, and development and content of integrated disciplines: *'they did multiple actions for calculating the amount of refreshments (math), to use polite speech phrases in the invitation (mother tongue), to blend ice cream cocktail (home economy)'*, *'the time for working in groups was too short'*. The second level of reflection displayed students' professional knowledge and analytical skills by categorization, comparison, logic reasoning and implementation of professional terminology.

Another level of reflection revealed her/his personal significance, meaning, values: *'Children's skills of planning, cooking, singing, etc., were so useful there...'*, *'my students calculated their own ecological footprint using math methods'*. According to Cotter, critical reflection is challenging, but intrinsically offers a reflexive space for honesty, self-critique, and new beginnings (Cotter, 2014). Life and cultural contexts appear in the teaching and learning process always with the phrase *'because of...'*. In this self-reflective stage, respondents articulated fundamental values that affirmed the meaning of their professional performance in the life context.

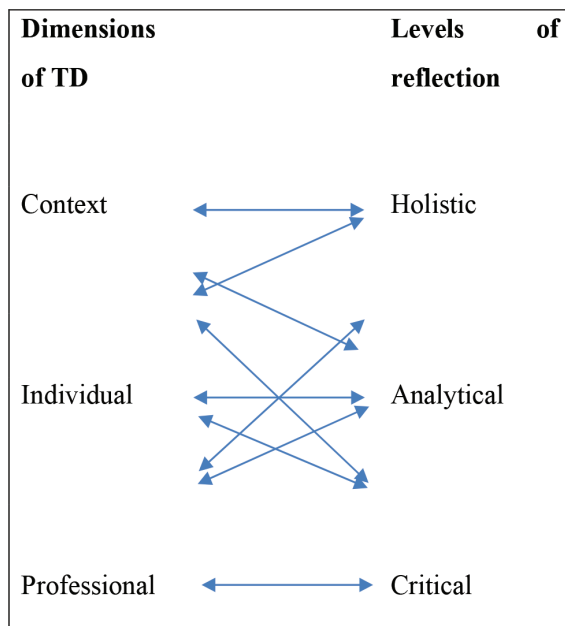
Respondents' expressions, typical words, phrases and samples of questions were structured in accordance with three dimensions of TD learning and three levels of reflection (Table 1).

Table 1. Preservice teachers' self-reflection about TD

Levels of reflection	Typical words and phrases	Appearance of TD in preservice teachers' expressions	Samples of questions
<b>Holistic reflection</b>	<i>I did., I felt..., I chose..., I decide..., It happens..., It appears...etc.</i>	<b>Context –</b> <i>events, situations, problems in life - classroom, community, nature etc.;</i> <b>individual –</b> <i>students' activities, behaviour, mimic, body language, expressions, intonations etc.;</i> <b>professional –</b> <i>I use methods; I expect it was so...</i>	<i>What did you see? What did you feel about? What did happen? What did you decide to do? What did you choose?</i>
<b>Analytical reflection</b>	<i>I did it because of..., My activity results..., The reason was..., The less..., the better..., If teacher does..., child learn..., Next time I will/ will not do it... etc.</i>	<b>Context –</b> <i>content of different subjects and students' individual skills help to solve problem etc.;</i> <b>individual –</b> <i>this method promotes students' learning, cognition, thinking, creativity, social skills etc.;</i> <b>professional –</b> <i>knowledge and processes of one field completed each other...etc.</i>	<i>How do you solve the problem?  How do you promote students' learning, cognition, thinking, creativity, social skills etc.?  How does content of one field help/ complete to learn another?</i>
<b>Critical reflection</b>	<i>It was important for me..., I chose it... because of, It was significant, meaningful, valuable for..., The contradiction is...etc.</i>	<b>Context –</b> <i>it is (problem solution) significant for each of us, for community etc.;</i> <b>individual –</b> <i>it is personally, socially and culturally important for student's learning etc. because of...;</i> <b>professional –</b> <i>importance of knowledge and skills of particular field for life - person, society, culture and world etc.</i>	<i>What is a value of problem solution for each of you for community?  Why this topic/ problem/ activity was actual for students? Why do you choose ...? What is importance of knowledge and skills of particular discipline for life - person, society, culture and world?</i>



These results suggest that preservice teachers' deep and constructive self-reflection on their transdisciplinary teaching performance can be realized if questions suggested for reflection cover all dimensions of TD and three levels of reflection. In total, there are nine, or  $3 \times 3$ , types of questions (Figure 3).



**Figure 3.** Nine types of questions for preservice teachers' reflection on TD

Multidimensional, multilevel reflection entails  $3 \times 3$  questions. These nine questions, altogether, comprise 'Form –  $3 \times 3$  questions for TD self-reflection', as will be developed and tested in future studies.

## Conclusions

In optimal guidelines for preservice teachers' self-reflection on TD, the structure of TD (context and individual professional dimensions) should be included. This forms the content of self-reflection. On the other hand, three levels of reflection: holistic, analytical, and critical, enabled the development of instructions for self-reflection that were deeply held and personally significant.

In the teacher's reflection on her/his professional performance, the aesthetic point of view must be taken into account, in addition to the analytical and critical standpoint.

If one of dimension of TD is not presented in teacher self-reflection, we cannot be sure that TD has been realised completely.

If one of the reflection levels is missing, preservice teacher's competency may be questioned.

The questions can be stated differently, but 3×3 question structure should be kept.

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