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DIDACTIC TRANSPOSITION OF RATIONAL NUMBERS: A CASE FROM A TEXTBOOK ANALYSIS AND PROSPECTIVE ELEMENTARY TEACHERS' MATHEMATICAL AND DIDACTIC KNOWLEDGE

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Abstract/Izvleček This study aims to present a detailed analysis of didactic transposition of rational numbers from knowledge to be taught into taught knowledge occurring in a teacher education institution. The knowledge to be taught of rational numbers is analysed from the mathematics textbook used by prospective elementary teachers in a mathematics education course. The analysis focuses on mathematical praxeology, especially the type of task and technique. Then, the taught knowledge is investigated from 32 prospective elementary teachers' collaborative work on two hypothetical teacher tasks (HTT) related to operations with rational numbers.

Didaktični prenos racionalnih števil: primer iz analize učbenika ter matematično in didaktično znanje bodočih učiteljev razrednega pouka Namen študije je predstaviti podrobno analizo didaktičnega prenosa racionalnih števil iz predvidenega znanja v poučevanje znanja, ki poteka v instituciji za izobraževanje učiteljev. Znanje racionalnih števil, ki naj bi se poučevalo, analiziramo po učbeniku matematike in ga pri predmetu matematika uporabljajo bodoči učitelji razrednega pouka. Analiza se osredinja na matematične prakseologije, zlasti na tip nalog in tehnik. Posredovano znanje nato proučujemo po sodelovalnih delih 32 bodočih učiteljev na temo dveh hipotetičnih nalog učiteljev (HNU), povezanih z operacijami z racionalnimi števili.

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Introduction

Previous studies on mathematics education have focused on teachers' knowledge and their learning and teaching of rational numbers (Alenazi, 2016; Depaepe et al., 2015; Johar, Patahuddin, & Widjaja, 2017; Z. H. Putra, 2019a; van Steenbrugge et al., 2014). The reason for concern on this topic is that many students find this subject difficult to learn, nor do teachers know how to teach it. Teachers tend to instruct students based on a standard procedure without knowing the underlying meaning (Putra, 2018; Sembiring, Hadi, & Dolk, 2008). Putra (2018), for instance, has investigated prospective Indonesian elementary teachers, working with five hypothetical teacher tasks (HTT) about rational numbers. An HTT is a task based on a teaching situation that may arise at school and allows teachers to use their relevant mathematical and didactic knowledge to act appropriately. Putra (2018) found that most prospective elementary teachers employed a standard technique to solve the mathematical tasks, such as the standard procedure for adding two fractions. The prospective elementary teachers mostly considered those as the only way to teach students about rational numbers. With more advanced tasks, such as the division of fractions, many prospective elementary teachers were unaware of the concept behind the standard procedure. Ma (1999) also found that only few U.S. elementary teachers realised the meaning of division of fractions, and many of them could not explain why the divisor has to be inverted to perform the standard procedure of fraction division.

Beyond the structure of rational numbers, Siegler and Lortie-Forgues (2017) mention that teacher knowledge and the rational number instruction in textbooks become culturally contingent sources of the difficulty. Many previous studies have investigated to what extent teachers understand and know rational numbers (Alenazi, 2016; Depaepe et al., 2015; Johar et al., 2017; Newton, 2008). In the case of division of rational numbers, Alenazi (2016) found that prospective teachers could not provide appropriate interpretations of symbolic problems or construct contextual problems involving fraction division. On the other hand, understanding decimals and their operations was hard for prospective teachers (Graeber, Tirosh, & Golver, 1989). Specifically on the task of decimal division, the primacy of the partitive division model becomes a source of difficulty because decimal quantities as divisors breach the basic concept that governs partitioning a whole rather than

finding the number of units of a given value in a given whole (Kastberg & Morton, 2014; Tirosh & Graeber, 1989).

Meanwhile, mathematics textbooks often provide students with simple rational number problems, such as to operate fractions with the standard procedure. Wijaya, van den Heuvel-Panhuizen, and Doorman (2015) have found that only a small number of tasks in Indonesian school textbooks provide students with opportunity-to-learn mathematical concepts based on real-life contexts. This similar situation could also be the case for textbooks used by prospective Indonesian teachers in initial teacher education. Therefore, this study aims to investigate the mathematical organisation that appears in a textbook used by prospective elementary teachers, and establish to what extent prospective elementary teachers' mathematical and didactic knowledge deals with the operations of rational numbers.

Arithmetic operations of rational numbers
Proficiency with arithmetic operations of rational numbers is particularly important for learners to learn more advanced mathematics and science, but many children and adults, including teachers, have some difficulty in this domain (Siegler & Lortie-Forgues, 2017). Several factors have been identified as the causes, including how this topic has been presented in school textbooks (Alajmi, 2012), teachers' knowledge (Depaepe et al., 2015; Hill, Schilling, & Ball, 2004; Newton, 2008), and the complexity of rational number construction (Charalambous & Pitta-Pantazi, 2007).

In terms of addition and subtraction of fractions, students often consider the procedure of adding or subtracting fractions as adding natural numbers (Li, 2014). They add or subtract the numbers based on their position. The students do not realise that they need to change the technique as well as the theoretical lens from viewing a fraction as two distinct numbers into seeing it as a number as a whole, or what (Putra, 2019b) calls a *praxeological change*.

A part-whole construction of fractions tends to be used by teachers to explain the task related to adding and subtracting fractions, and it is mostly represented through diagrams. Inaccuracy in using this model can lead students to misinterpret fractions. Austin et al., (2011), focusing their study on the addition of fractions, established some prospective teachers' misconceptions about and misinterpretation of the unit used to add two fractions.

When the teachers designed a contextual task, they did not realise the importance of two units being the same size and shape when adding fractions. In addition, some of them were unaware of using standard units of measurement rather than informal units, and different measuring units cannot represent the same fractional part.

Theoretical constructions for multiplication and division of rational numbers are much more challenging for many teachers to teach and students to learn. Many students overgeneralise the techniques used in the natural numbers to rational numbers. To deal with this situation, teachers tend to explain the standard procedure for the multiplication of two fractions. They do not elaborate on the various theoretical explanations for multiplication of rational numbers, such as repeated addition, area concept, multiplicative measurement (Isiksal & Cakiroglu, 2011), and linear mapping (Brousseau, 2002).

The division of rational numbers becomes much more challenging for teachers to explain. Ma (1999), two decades ago, confirmed the difficulty encountered by U.S. teachers in explaining the meaning of standard techniques of fraction division. They could not consider several interpretations of the division of rational numbers, such as sharing or quotative division and measurement or partitive division. Alenazi (2016) also found that many prospective teachers could not link the measurement and unit rate concept to the task of fraction division. This finding indicates that the constructions of the division of fractions or rational numbers has become a challenge for teachers to understand and to instruct pupils within those interpretations.

Concerning multiplication and division of decimals, Graeber and Tirosh (1988) found that prospective teachers' primitive models of multiplication influence their performance in constructing real world problems. They have major challenges in constructing and explaining the multiplication of decimals involving operators less than 1. Although many prospective teachers were perfectly capable of performing operations with decimals, some still used reasoning based on their experience with whole numbers (Graeber & Tirosh, 1988), such as that one cannot divide by a decimal. In addition, the primacy of the partitive division model becomes a source of difficulty for many students and teachers (Kastberg & Morton, 2014; Tirosh & Graeber, 1989). In the present study, I developed and designed two teacher tasks

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based on teachers' difficulties and challenges in learning operations with rational numbers. The first task focuses on teachers' mathematical and didactic knowledge of addition and subtraction of fractions. The second task presents a situation related to students' difficulties with multiplication and division of decimals. The elaboration of the tasks is presented in the Methods section.

Theoretical framework: didactic transposition

The theoretical framework underpinning this study is the *anthropological theory of the didactic* (Chevallard, 2006). This theory employs an epistemological and institutional approach to study "didactic phenomena" such as transposition of knowledge. A body of knowledge, such as fractions or rational numbers, taught by teachers at school is initially produced in institutions outside school. This knowledge presented to students has been transformed from the scholarly knowledge produced by mathematicians, to learned knowledge. This is not such a simple process but involves several processes and needs modification during these processes. The model for these processes is known as *didactic transposition* (Bosch & Gascón, 2006; Chevallard, 1985). So, didactic transposition is a model for understanding *didactic phenomena,* such as what knowledge is being taught by teachers at school, how this knowledge has been reconstructed by the education system, and how it is originally produced by scholars or mathematicians.

A simplified model of the process of didactic transposition is presented in Figure 1 (Bosch & Gascón, 2006; Chevallard & Bosch, 2014). A body of mathematical knowledge begins from scholarly knowledge produced by mathematicians. This knowledge should be transformed into a form that can be made available to students in the learning institution. It is decided by the *noosphere* or people in the system, e.g., people working in the ministry of education, curriculum designers, textbook developers, and politicians. The knowledge to be taught is presented in school textbooks, and then teachers play a role in transforming it into taught knowledge. In some cases, the teachers may directly present students with what appears in the textbooks, but it is also possible that changes introduced at this time are caused by the teachers' teaching experiences and their professional knowledge from teacher education programmes. Finally, learned knowledge acquired by students is considered as the end of this didactic transposition. The arrows indicate the causes and effects from one didactic process to the other.
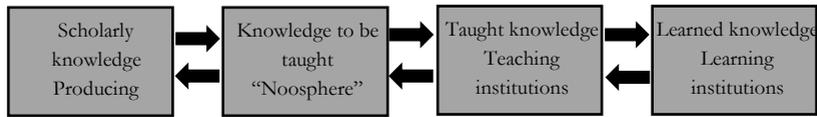
Figure 1: The didactic transposition process in mathematics education (Bosch & Gascón, 2006)

The body of knowledge to be studied in each process must be well-defined. Chevallard (2006, 2007), through his anthropological theory of the didactic, introduced an epistemological model to analyse human knowledge, and it is known as *praxeology*. A praxeology is a minimum unit in which one can analyse the human knowledge occurring in a transposition process into two interconnected components: *praxis* or a practical block, and *logos* or a knowledge block. The practical block unifies two interrelated components: *the type of task* (T) to be studied and *techniques* (τ) functioning to solve the task. For example, one type of task is adding two fractions, and one of the techniques to solve this task involves changing both fractions into fractions with a common denominator and then adding the numerators. The knowledge block unifies *a technology* (θ) used to clarify the techniques and *theory* (Θ) to validate several technologies. An example of technology to explain the standard procedure of adding two fractions is based on the rule of adding two fractions through changing both fractions into fractions with a common denominator, and the arithmetic property of adding fractions functions as a general theory to justify this technology. In the present study, I have employed praxeology to analyse the didactic transposition of rational numbers. The study focuses only on knowledge to be taught and taught knowledge (Lundberg & Kilhamn, 2018; Pansell & Boistrup, 2018). The knowledge to be taught is investigated through analysing a mathematics textbook for teacher education. The taught knowledge is studied through prospective teachers' collaborative work on two mathematical and didactic tasks about operations with rational numbers. My study focuses on the operations of rational numbers because these have been shown by many studies to be challenging for pupils to learn (Kara & İncikabı, 2018) and also challenging for teachers to teach (Depaepe et al., 2015; Ma, 1999; van Steenbrugge et al., 2014). Thus, the research questions for this study can be stated as follows:

RQ1. What knowledge to be taught on the arithmetic of rational numbers appears in mathematics textbooks for teacher education?

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RQ2. What taught knowledge is discussed by prospective elementary teachers during their collaborative work?

RQ3. How is the taught knowledge related to the knowledge to be taught?

Methods

This study is based on a qualitative research method developed within the anthropological theory of the didactic, specifically didactic transposition and praxeology (Chevallard, 2006). The first step is to analyse the praxeology of four arithmetic operations of rational numbers from a mathematics textbook for teacher education. I follow the textbook analysis method from Wijayanti and Winslow's study (2017) by describing the praxeological reference models (PRM) that appear in the textbook. The textbook analysed in this study is an unpublished mathematics textbook written by Putra (2014). This textbook was chosen because prospective elementary teachers use it while taking a course on mathematics education for the upper grades of elementary school (preparing them to teach grades 4 to 6) in the elementary teacher education study program in a public university in Riau, Indonesia.

The second, and the essential part, is to analyse prospective elementary teachers' knowledge of the arithmetic operations of rational numbers. The idea is to examine teachers' mathematical and didactic praxeology appearing during their individual and collaborative activities working on HTT about the arithmetic operations of rational numbers (Putra, 2018). The main characteristic of HTT is that prospective elementary teachers are situated in a hypothetical situation where students experience the difficulties and challenges of learning the arithmetic operations of rational numbers. So, they are encouraged to solve this problem and are asked to share their mathematical and didactic knowledge with their pairs.

The first HTT is about addition and subtraction of fractions, and the second is about multiplication and division of decimals (Figure 2). I present two different rational number representations to yield broader insights into prospective elementary teachers' knowledge of rational numbers. The two tasks presented in this study were part of Putra's previous studies (Putra, 2018), and HTT 2 was adapted from TEDS-M studies (Senk et al., 2012). HTT 1 consists of three tasks.

The first task examines prospective elementary teachers' mathematical knowledge; the second task is to let them individually analyse incorrect answers from imaginary students (e.g., adding both numerators and both denominators), and finally, they are asked to discuss their answers given in support of the students' learning process. HTT 2 directly leads prospective elementary teachers to work collaboratively to handle students' difficulties with multiplication and division. Didactic transposition plays an important role in describing the connection between knowledge to be taught and taught knowledge. The knowledge to be taught is viewed from the praxeological analysis of rational numbers appearing in the textbook. Then, the taught knowledge is studied from the praxeological analysis of prospective elementary teachers' mathematical and didactic knowledge of operations with rational numbers.

HTT about addition and subtraction of fractions:
You ask sixth-grade pupils to solve $\frac{2}{3} + \frac{1}{2} = \cdots$, and $\frac{4}{7} - \frac{1}{3} = \cdots$

a. How do you solve these problems? (*to be solved individually within 3 minutes*)
You find that many pupils add and subtract fractions in the following way $\frac{2}{3} + \frac{1}{2} = \frac{3}{5}$, and $\frac{4}{7} - \frac{1}{3} = \frac{3}{4}$.

b. How do you interpret the pupils' methods? (*to be solved individually within 3 minutes*)
c. What strategies can you propose to teach these pupils? (*to be discussed and solved in pair, 5 minutes*)

HTT about multiplication and division of decimals
As a teacher, you ask pupils to compute the following as homework:
a) $0.25 \cdot 8 = \cdots$, b) $8 \div 0.25 = \cdots$
At the next meeting in the class, a pupil notices that when he enters $0.25 \cdot 8$ into a calculator, the answer is smaller than 8, and when he enters $8 \div 0.25$, the answer is bigger than 8. He is confused with this answer and thinks that the calculator must be broken.

What can you do to help such pupils understand this result? (*discuss in pairs in 8 minutes, use the space below if necessary, and write your ideas to support the discussion*)

Figure 2: Two HTTs about operations with rational numbers.

The participants of this study were 32 fourth-year prospective elementary teachers working in pairs and coming from the elementary teacher education study program (7 males and 25 females, *Mean age* = 21.8 years, SD = 0.57). These prospective elementary teachers volunteered to participate in the study based on their desire to learn about and to help the researcher learn more about operations with rational numbers. The researcher sought permission from all participants before they agreed to participate in this study and informed them that their information provided was

confidential, and their names were anonymous. In addition, we renamed all pairs from group 1 to group 16, and two prospective elementary teachers, for instance, from group 1 are coded as S_{1a} and S_{1b}.

As prospective elementary teachers, they are going to be classroom teachers who teach not only mathematics but also other integrated subjects, such as science, social science and the Indonesian language. They have already completed all the courses offered in the study programme. There are 7 courses related to mathematics education (18 credits/12.5%), namely: 1) Fundamental mathematics for elementary schools I, 2) Fundamental mathematics for elementary school II, 3) Mathematics education for the lower grades of elementary school, 4) Mathematics Education for the upper grades of elementary school, 5) Statistics for education, 6) Capita selecta of mathematics (e.g. problem solving and modeling in mathematics) and, and 7) Indonesian realistic mathematics education (Putra, 2019b). The last two courses are optional, but prospective elementary teachers have to choose one of these. The concept of rational numbers was presented in the course of fundamental mathematics for elementary school I, and the instruction related to learning and teaching rational numbers was given to prospective elementary teachers in the course of mathematics education for the upper grades of elementary school in the second year of their study, where the analysed textbook was a manual for this course. This means that prospective elementary teachers have sufficient mathematical and didactic knowledge of operations with rational numbers. The data for this study consist of participants' written answers and video recordings. These data were analysed in terms of mathematical and didactic praxeology. The analysis focuses on prospective elementary teachers' techniques and the technological-theoretical discourse appearing during their collaborative work. The mathematical techniques were coded from prospective elementary teachers' written answers, and the didactic techniques were interpreted from their explanation in the discussion of how to explain mathematical techniques to students. Then, prospective elementary teachers' mathematical and didactic technologies were interpreted from their justifications of the given techniques. For example, prospective elementary teachers mention that they need to change two fractions into a common denominator to add the two fractions because the two fractions have to be the same unit fraction. This is the mathematical technology to justify the mathematical technique of adding two fractions.

The terminology mentioned by the prospective elementary teachers indicates the mathematical and didactic theory--for instance, when a prospective teacher provides an explanation that learning fractions should relate to students' daily life activities. This explanation can be seen as reflecting realistic mathematics education theory (Freudenthal, 1991). The data analysis was done by the author, and passages indicating mathematical and didactic praxeology were reviewed several times. The passages containing questionable points were discussed with two mathematics education researchers who are familiar with the content and context of the study. Then, prospective elementary teachers' mathematical and didactic praxeology were compared to the PRM of the textbook analysis to study the extent of the didactic transposition.

Results

The results of this study are presented in two sections. First, I describe the praxeological analysis of the arithmetic operations of rational numbers appearing in the textbook. The second part presents prospective elementary teachers' collaborative work on HTTs concerning the mathematical and didactical praxeology being discussed in pairs.

Knowledge to be taught: Praxeology from the textbook for teacher education
The topic of rational numbers is presented in a section called "Fractions" from pages 51 to 66. The section is divided into ten subsections (Table 1) and followed by three tasks at the end of this section. Decimals are presented as a part of fractions and introduced through converting fractions into decimals and vice versa. The arithmetic operations of rational numbers cover two-thirds of the topics.

The textbook presents two mathematical techniques on how to convert fractions into decimals. The techniques are described as follows:

$\tau_{1\ f \to d}$: change a fraction into a fraction with the denominator of the power of ten and then convert it into a decimal by putting the comma to the numerator based on the number of zero digits on the denominator. e.g. $\frac{13}{25} = \frac{13 \times 4}{25 \times 4} = \frac{52}{100} = 0.52$

$\tau_{2\ f \to d}$: use long division to find the quotient; this technique is also known as a standard division algorithm.

In contrast, to convert a decimal into a fraction, the technique presented in the textbook is the opposite of $\tau_{1\ f\rightarrow d}$, and can be described as follows:

$\tau_{1\ d\rightarrow f}$: change the decimal into a decimal fraction and then simplify it.

Table 1: Topics of rational numbers presented in the textbook.

Subsection	Topics	Sub topics
1	Definition of fractions	
2	Equivalent fractions	
3	Comparing fractions	
4	Simplifying fractions	
5	Converting fractions	Converting fractions to percentages and vice versa
		Converting fractions to decimals and vice versa
		Converting decimals to percentages and vice versa
6	Adding fractions	Adding fractions with common and uncommon denominators
		Adding decimals
		Adding fractions and decimals
7	Subtracting fractions	Subtracting fractions with common and uncommon denominators
		Subtracting decimals
		Subtracting fractions and decimals
8	Multiplication of fractions	Multiplying an integer and a fraction
		Multiplying two fractions
		Multiplying an integer and a mixed fraction
		Multiplying decimals
9	Division of fractions	Dividing an integer by a fraction
		Dividing a fraction by an integer
		Dividing a fraction by a fraction
		Dividing decimals
10	Proportion and scale	

The textbook provides no technology-theoretical discourse to justify those techniques, but it can be implied that the equivalent value between fractions and decimals is the technological justification for those techniques; the value between two different representations, such as $\frac{13}{25}$ and 0.52, remains the same.

Adding fractions and decimals

The types of mathematical tasks presented in the textbook begin from adding two unit fractions with a common denominator (T_{1f+}, e.g., $\frac{1}{4} + \frac{1}{4}$). This is followed by adding fractions with uncommon denominators (T_{2f+}) and adding mixed fractions (T_{3f+}). The mathematical techniques suggested for solving these mathematical tasks are presented, respectively, as follows:

τ_{1f+}: represent each fraction into a circle representation, shade each circle based on the given fraction, and then combine both representations into a circle representation.

τ_{2f+}: change both fractions into fractions with a common denominator and then add the numerators.

τ_{3f+}: add the integers and the fractions separately and then combine them (e.g., $4\frac{5}{12} + 3\frac{3}{12} = (4+3)\frac{5+3}{12} = 7\frac{8}{12} = 7\frac{2}{3}$).

τ_{2f+} is a general mathematical technique for solving any type of task involving adding of fractions. The textbook gives no technological-theoretical explanation to justify those techniques, but one can infer that the definition of a fraction, that a fraction is defined as a part of a whole, and a fraction as a number is written as $\frac{a}{b}, b \neq 0$, becomes the theory to justify these techniques.

The textbook also presents how to add two decimals after presenting the praxeology for adding fractions. The textbook presents a standard mathematical technique by adding the digits of the two decimals based on their place value (τ_{1d+}) to solve the type of mathematical task of adding two decimals (T_{1d+}). Even though the textbook gives no technology, one can infer place value as the general theory behind this praxeology.

Subtracting fractions and decimals

To the case of subtracting fractions, the textbook states that the mathematical techniques used to subtract fractions are the same as those for adding fractions. This is followed by presenting three types of subtraction task: subtracting two unit fractions with a common denominator (T_{1f}, e.g., $\frac{3}{4} - \frac{1}{4}$); subtracting fractions with uncommon denominators (T_{2f}) and subtracting mixed fractions (T_{3f}). These tasks

correspond to the mathematical techniques τ_{1f}, τ_{2f}, and τ_{3f}, respectively, within explanations similar to what has been presented in the mathematical techniques for adding fractions. For instance, to solve $\frac{3}{4} - \frac{1}{4}$, the textbook presents a circle diagram to represent $\frac{3}{4}$ (dividing the circle into four equal parts and shading three parts to represent $\frac{3}{4}$), then presents another circle for $\frac{1}{4}$, and states that $\frac{3}{4}$ minus $\frac{1}{4}$ equals $\frac{2}{4}$ (by presenting a circle diagram with four equal parts, two of which are shaded). Similarly, the textbook presents a type of task about subtracting two decimals (T_{1d}), and the mathematical technique for this task is similar to that for adding decimals (coded as τ_{1d}).

Multiplying fractions and decimals

The textbook presents three types of mathematical tasks: multiplying an integer and a fraction ($T_{1f\times}$); multiplying two fractions ($T_{2f\times}$), and multiplying an integer and a mixed fraction ($T_{3f\times}$). Two mathematical techniques are presented related to these tasks, as follows:

$\tau_{1f\times}$: use a rectangular model to represent fraction multiplication as an area of a rectangle.

$\tau_{2f\times}$: use a standard algorithm for multiplication of fractions (e.g., $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$).

Concerning $T_{2f\times}$, the textbook gives the example of $\frac{3}{4} \times \frac{5}{6}$. Figure 3 shows how the mathematical technique $\tau_{1f\times}$ works, and how it connects to $\tau_{2f\times}$.
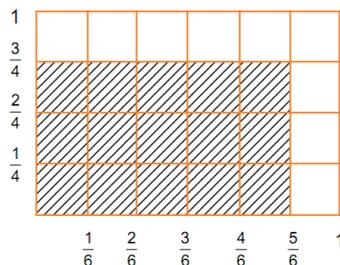
Figure 3: *A rectangle model of multiplication of fractions.*

Figure 3 is followed by the explanation that there are 15 shaded square units out of 24 square units, so $\frac{3}{4} \times \frac{5}{6} = \frac{15}{24}$.

Two mathematical techniques are proposed to solve the task type of multiplication of decimals ($T_{1d\times}$). The first technique is to convert decimals into fractions and then multiply the two fractions ($\tau_{1d\times}$). The second technique is to multiply two decimals as multiplication of integers, and at the end, place the comma into the multiplication result based on the sum of numbers of digits from the two decimals ($\tau_{2d\times}$). There is no technological-theoretical discourse mentioned in the textbook to justify these techniques.

Dividing fractions and decimals

Three types of mathematical task about dividing fractions are presented in the textbook. The first type of task is the division of an integer by a fraction ($T_{1f\div}$). This is followed by the task of dividing a fraction by an integer ($T_{2f\div}$). The last type of task is the division of a fraction by a fraction ($T_{3f\div} = \frac{a}{b} \div \frac{c}{d}$). The textbook presents two mathematical techniques for solving the first two types of task. The first technique is to use a rectangle model ($\tau_{1f\div}$), and the second technique is called an algebraic technique ($\tau_{2f\div}$). Both techniques are illustrated by the task of $5 \div \frac{1}{2}$.

Concerning $\tau_{1f\div}$, the textbook presents 5 squares and then divides each square into 2 parts. Under the drawings, there is a text explaining that each square consists of 2 halves, so 5 squares consists of 5 x 2 halves that equals to 10 halves. While the algebraic technique ($\tau_{2f\div}$) is described as follows:

$$t_{2f\div}: 5 \div \frac{1}{2} = n, \text{find } n$$
$$\text{Solution}: \frac{2}{1} \times \frac{1}{2} = 1, \text{so } 5 \times \left(\frac{2}{1} \times \frac{1}{2}\right) = 5$$
$$\left(5 \times \frac{2}{1}\right) \times \frac{1}{2} = 5$$
$$\left(5 \times \frac{2}{1}\right) = 5 \div \frac{1}{2}$$
$$5 \div \frac{1}{2} = 10$$
$$n = 10$$

Thus, the technique $\tau_{3f\div}: \frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$ has been proven, and it can be applied to all types of fraction division tasks.

To solve the third type of task, the textbook gives a standard algorithm for dividing fractions ($\tau_{3f\div}$) that is built upon the technique $\tau_{2f\div}$. The technique ($\tau_{3f\div}$) is commonly called the invert-and-multiply rule for dividing fractions. The technological discourse to justify technique $\tau_{1f\div}$ for a task of type $T_{1f\div}$ seems to differ from a task of type $T_{2f\div}$. Quotative division is the technological discourse underlying the use of technique $\tau_{1f\div}$ for the task of type $T_{1f\div}$, and partitive division is used to justify the use of technique $\tau_{1f\div}$ for a task of type $T_{2f\div}$.

Two mathematical techniques are proposed for solving the task type involving division of decimals ($T_{1d\div}$), and these are similar to what has been presented for the task of type $T_{1d\times}$. The first technique is to convert decimals into fractions and then to divide the two fractions ($\tau_{1d\div}$). The second technique is to divide two decimals as a division of integers ($\tau_{2d\div}$); first, change the divisor into an integer by multiplying the divisor and the dividend by the power of ten; after that, apply the standard algorithm of division to get the quotient. There is no technological-theoretical discourse mentioned in the textbook to justify these techniques.

Taught knowledge: Prospective elementary teachers' mathematical and didactic praxeology
Praxeological analysis of HTT 1

HTT 1 consists of mathematical and didactic tasks. These tasks derive from the tasks of type T_{2f+} and T_{2f-} and can be written as t_{2f+}: $\frac{2}{3} + \frac{1}{2}$ and t_{2f-}: $\frac{4}{7} - \frac{1}{3}$. The didactic tasks proposed in the second and third questions can be described as follows:

$Q_2 \rightarrow t_{d1,f+}$: give your interpretations of pupils' incorrect mathematical technique for t_{2f+},

and $t_{d1,f-}$ is coded as the didactic task for the subtraction of fractions.

$Q_3 \rightarrow t_{d2,f+}$: propose strategies to help pupils solve the mathematical task t_{2f+}, and provide some explanation or justification for the given techniques, and $t_{d2,f-}$ indicates the didactic task for the subtraction of fractions.

Of the 32 prospective elementary teachers, 30 gave correct answers to the mathematical tasks t_{2f+} and t_{2f-}. All of them applied the mathematical techniques τ_{2f+} and τ_{2f-}, respectively.

One prospective teacher also provided an alternative mathematical technique using the rectangle model (t_{1f+}) to solve the addition task (τ_{2f+}), and she confirmed that a similar technique could be used to solve the subtraction task (t_{2f}). Two prospective elementary teachers could not give correct answers, although they tried to employ the mathematical techniques τ_{2f+} and τ_{2f-}. They did not know how to find an equivalent fraction (Figure 4), although they might have realised that the two fractions could not be added or subtracted if the denominators were not the same.

$$\frac{2}{3} + \frac{1}{2} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

$$\frac{4}{7} - \frac{1}{3} = \frac{4}{21} - \frac{1}{21} = \frac{3}{21}$$

Figure 4: A prospective teacher's written answer to mathematical tasks t2f+ and t2f-.

Prospective elementary teachers' interpretation of the mathematical task t_{2f+} and t_{2f-} was related to their judgment that pupils should simply add and subtract fractions as they did with integers. This justification was written by 9 prospective elementary teachers. For instance, a prospective teacher from group 3 (coded as S_{3a}) wrote: The answers given by those pupils are wrong because they solve the tasks based on the common addition [and subtraction] operations of [integers]….When the pupils find these types of task, they will directly solve using the common addition [and subtraction] operations. Therefore, it is necessary to explain the appropriate techniques. Three prospective elementary teachers wrote that pupils did not know the meaning or concept of fractions. The pupils should consider that fractions are different from integers, and the operations of addition and subtraction of fractions are not similar to the techniques used for addition and subtraction of integers. Meanwhile, 26 prospective elementary teachers wrote that the pupils need to understand the procedural techniques for adding and subtracting fractions. They proposed mathematical techniques τ_{2f+} and τ_{2f-} to teach pupils. For instance, this can be illustrated by the written answer from S_{4a}:

We have to teach pupils to understand the addition operation of fractions--that they cannot directly add those numbers, but they have to change both fractions into fractions with a common denominator.

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Additionally, two prospective elementary teachers wrote that a teacher needs to explain contextual situations or number lines to the pupils. However, they provided no further explanation or technological justification for how to employ those didactic techniques.

In the peer discussion, it is evident that all prospective elementary teachers agreed to teach pupils the mathematical techniques τ_{2f+} and τ_{2f-}, and this didactic technique is coded as direct instruction in the standard mathematical techniques ($\tau_{2f+}{}^*$ and $\tau_{2f-}{}^*$). It is shown by the discussion between a pair in the following excerpt.

S_{3b}: In my opinion, pupils have to know, for instance, what a denominator is.
S_{3a}: The concept.
S_{3b}: Eh, the concept of fractions, which one is the denominator.
S_{3a}: Yes.
S_{3b}: On the top or the bottom?
S_{3a}: Which one is the numerator?
S_{3b}: It is not possible 3+2=5, so both fractions have to be changed into fractions with a common denominator. That is the technique. What do you think?
S_{3a}: I also did it like that. It means for fractions with uncommon denominators; we have to change them into fractions with common denominators. The denominators are the numbers at the bottom, aren't they?

S_{3b}: Hmm.
S_{3a}: After that, both fractions can be added.
S_{3b}: If some pupils still do not understand because fractions are complicated topics.
S_{3a}: If some pupils do not understand, we can come closer to their desks.
S_{3b}: Guide them one by one.
S_{3a}: But, it has to be specific when explaining mathematics. When I taught mathematics, I used to explain it many times.

Both prospective elementary teachers agree to instruct pupils based on the standard algorithm. The discussion mainly focuses on how to change both fractions into fractions with a common denominator. This technique conforms to what is presented in the textbook (τ_{2f+}). Both prospective elementary teachers hardly mention technological discourse to justify the technique.

Mastering the standard procedure is known as a conceptual understanding of fractions, and it seems that they rely on this as a theoretical justification for the operations of adding and subtracting fractions. In addition, explaining the standard techniques personally and re-explaining those techniques often become general didactical techniques for teaching mathematics.

Three pairs of participants suggested alternative didactic techniques for teaching addition and subtraction of fractions. Two pairs suggested explaining the meaning of fractions before the pupils learn how to add fractions. For instance, S_{12a} mentioned that pupils need to know that a fraction consists of a numerator and a denominator, and the operations of adding and subtracting fractions are different from those for multiplication and division of fractions. Teachers need to support pupils in understanding the different algorithms for the operations of fractions. The technological-theoretical discourse described by S_{12a} relied on what appears in the textbook for student teachers. Meanwhile, only S_{1a} proposed a didactic technique based on a concrete model. She suggested explaining the meaning of adding and subtracting fractions using rectangle models, but she did not really use the model to show how the common denominator appears as a consequence of combining both fractions (Putra, 2018).

Praxeological analysis of HTT 2

HTT 2 consists of two types of mathematical tasks. The tasks belong to $T_{1d\times}$ and $T_{1d\div}$, respectively, which can be described as $t_{1d\times}$: 0.25 × 8 and $t_{1d\div}$: 8 ÷ 0.25. The didactical tasks associated with the two tasks can be defined as follows:

$t_{d1,d\times}$: what teachers can do to support pupils' understanding so that the result of mathematical task $t_{1d\times}$ is smaller than 8.

$t_{d1,d\div}$: what teachers can do to support pupils' understanding so that the result of mathematical task $t_{1d\div}$ is bigger than 8.

To solve the tasks presented in HTT2, most prospective elementary teachers sought the correct answers. Among sixteen pairs, three pairs did not give sufficient praxeology for both tasks. They wrote no mathematical techniques on their worksheets and just discussed general ideas that sometimes did not support pupils' understanding of the didactic tasks. The following excerpts illustrate this:

S_{4a}: We tell the pupils that the result of any number multiplied by 0 must be 0 even though one uses a calculator. It does not mean the calculator is broken.

S_{4b}: It becomes confusing. If the calculator is not broken, why is the result like that?

S_{4a}: The rule is like that.

S_{4b}: The mathematics rule.

S_{4a}: The pupils are confused, and I am also confused (Laugh). Indeed, I am also confused.

Although S_{4b} mentioned "the mathematics rule", she did not give any further justification of what it means. Limited mathematical knowledge of rational numbers becomes a major challenge for them to construct enough mathematical and didactic praxeology. Table 2 presents the summary of correct mathematical techniques proposed by prospective elementary teachers to the mathematical tasks of HTT 2. The most common mathematical technique for both tasks was to change decimals into fractions and then apply the standard algorithm for the multiplication of fractions ($\tau_{1d\times}$) or for the division of fractions ($\tau_{1d\div}$). However, the number of techniques for both tasks was not the same. This indicates that prospective elementary teachers handled the two tasks differently.

One of the commonalities (Table 2) among thirteen pairs in discussing the second HTT was to instruct pupils directly from these mathematical techniques.

Table 2: A summary of prospective elementary teachers' mathematical techniques for solving $t_{1d\times}$ and $t_{2d\div}$

Mathematical techniques for $t_{1d\times}$	n	Mathematical techniques for $t_{d1,d\div}$	n
Use the standard algorithm for multiplication of decimals	3	Convert both numbers into integers, and then apply the standard algorithm of integers	2
Change decimals into fractions, and then apply the standard algorithm for multiplication of fractions	6	Change decimals into fractions, and then apply the standard algorithm for division of fractions	10
Use ratio or proportional reasoning	3	Use inverse proportion	2
Use multiplication as repeated addition	4	Use division as repeated subtraction	0
Total	16	Total	14

They agreed with the standard techniques without offering further justification.

However, many pairs had difficulty, particularly with the division task, because they struggled to explain the meaning behind the standard algorithm for division of fractions. Table 3 presents a summary of prospective elementary teachers' didactic techniques.

Table 3: A summary of prospective elementary teachers' didactic techniques for solving $t_{d1,d\times}$ and $t_{d1,d\div}$

Didactic techniques for $t_{d1,d\times}$	n	Didactic techniques for $t_{d1,d\div}$	n
Instruct pupils directly using the standard algorithm for multiplication of decimals	3	Ask pupils to convert both numbers into integers and then explain the division algorithm for integers.	2
Ask pupils to change decimals into fractions, and then explain the standard algorithm for multiplication of fractions	6	Ask pupils to change decimals into fractions, and then explain the standard algorithm for division of fractions	10
Explain using ratio or proportional reasoning	3	Explain using inverse proportion	2
Explain to pupils based on the meaning of multiplication as repeated addition	4	Explain based on a contextual problem/real life situation through which pupils can experience the division of a fraction/decimal	2
		Provide pupils with a simple problem. e.g. $8 \div 4$, and ask them to think and link to the given task.	2
Total	16	Total	17

A common didactic technique suggested by prospective elementary teachers during their collaborative work was to instruct pupils directly based on the mathematical techniques $\tau_{1d\times}$ and $\tau_{1d\div}$. They tended to agree with both techniques without offering any technological or theoretical discourse. This is illustrated by the discussion from group 1:

S_{1a}: Well, it is just like this. We explain that 0.25 equals $\frac{25}{100}$.

S_{1b}: Yes.

S_{1a}: $\left[\frac{25}{100}\right]$ is multiplied by 8. So here is the result (points to the answer on her worksheet). After that, 8 divided by 0.25, and it equals $\frac{25}{100}$ (the statement followed by S_{1b}).

So, when it is the division of fractions, the sign of [division] becomes multiplication, and the divisor is reversed. It ends.

It is obvious that they provided no justification for the standard algorithm, particularly the division algorithm of fractions. The rule in the algorithm is something that pupils need to follow without knowing what it means or how it arises. They do not seem to relate to the manner in which the textbook explains the issue. Besides instructing pupils directly on the standard algorithm for multiplication of decimals, another common didactic technique suggested by prospective elementary teachers was to explain the meaning of multiplication as repeated addition, and it was commonly followed by ratio or proportional reasoning to explain the didactic task of $t_{d1,d\times}$. However, prospective elementary teachers did not apply a similar idea to explain the didactic task of $t_{d1,d\div}$. This can be seen from a discussion between the prospective elementary teachers in group 2.

S_{2a}: Let's try, for example, multiplication is repeated addition.
S_{2B}: Oh, yes. Multiplication is repeated addition, so it is 8 times 0.25; add 0.25, add 0.25 until 8 times.
S_{2A}: Yes.
S_{2B}: So, division is repeated subtraction, isn't it? Why is the result 32?
S_{2A}: No, not like that. It is just for multiplication.

Both prospective elementary teachers agreed to teach pupils the meaning of multiplying rational numbers by repeated addition for the multiplication task but not by repeated subtraction for the division task. This could have been caused by the result of the division task, which is greater than the two operators, and it seems to contradict the technology discourse for the division of integers. Then, both prospective elementary teachers continued their discussion to construct another didactic praxeology based on ratio and proportion.

S_{2a}: Like this. For example, if half of 8 is equal to 4, a quarter of 8 is equal to 2.
S_{2B}: A quarter of 8 is equal to 2.
S_{2A}: Yes, it is a quarter, isn't it? 0.25.
S_{2B}: Yes. Ok, that is our logic. So, how can we explain it to pupils who do not yet understand it?
S_{2A}: Yes. We first explain it based on [multiplication and division of] fractions.

S_{2a} could make a link between ratio and multiplication, but she did not mention or discuss the similar idea for handling the didactic task of $t_{d1,d\div}$.

In addition, the ratio and proportion-based didactic technique seems to be an alternative after the pupils learn the standard algorithm for multiplication of fractions.

There were three alternative didactic techniques discussed by prospective elementary teachers to explain the didactic task of $t_{d1,d\div}$ (Table 3). One was to explain the division task using a contextual or real life situation. Group 13 discussed this idea using the context of sharing cakes.

S_{13b}: I think like this, because it is eaaa 0,... For the division task, it might be true that the result is more than [8], and 8 is divided by 0.25. Assuming there are, for example, 8 pieces of cake (She drew 8 circles). 4, 5, 7, and 8.
S_{13a}: Hmm.
S_{13b}: 0.25 is equal to a quarter. This means 4, 4, 4, 4, 4, 4, 4, and 4 (She divides each circle into 4 pieces described in figure 5). The total is 32.
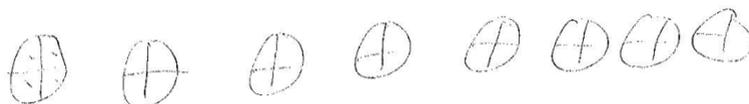
Figure 4: *Diagram representations for the task of fraction division*

S_{13a}: 1, 2, 3, 4, 5, 6, and so on (He pointed and counted each slice of the circles). Isn't it?

The technological-theoretical discourse behind the contextual situation proposed by S_{13a} could be quotative division. It was indicated by the idea of finding how many quarters of cake were in 8 whole cakes. This theory is effective for completing a division task involving a divisor smaller than 1. Concerning those mathematical and didactic techniques discussed by prospective elementary teachers, many prospective elementary teachers proposed techniques with insufficient technological and theoretical discourse. For instance, none of the prospective elementary teachers explained why one needs to change the sign of division into multiplication when

doing division operations on fractions. Many prospective elementary teachers mentioned only that it was a rule they had learnt, and the pupils needed to apply similar techniques. Some prospective elementary teachers could provide a general technological-theoretical discourse to explain why the multiplication yields an answer smaller than 8, while division gives an answer greater than 8. This explanation corresponds to a general mathematical theory related to multiplication and division with rational numbers.

Didactic Transposition from knowledge to be taught to taught knowledge
The analysis of knowledge to be taught was based on what mathematical praxeology was presented in the textbook. The investigation of this study showed that the textbooks presented 4 types of tasks for each domain (addition, subtraction, multiplication and division of rational numbers), and one type of task was related to the operation of decimals. Meanwhile, the textbooks propose four techniques to solve the tasks of adding and subtracting rational numbers, and one of the techniques was specified for adding and subtracting of decimals. There were also 4 techniques for multiplication of rational numbers and 5 techniques for division of rational numbers. There were different numbers of techniques between the two domains because the textbook also presents algebraic techniques for fraction division. In addition, there was no explicit technological-theoretical discourse presented in the textbook to justify the practical block. Concerning taught knowledge, the tasks given to prospective elementary teachers formed part of the tasks presented in the textbook. The techniques suggested by these prospective elementary teachers were mostly dominated by common mathematical techniques based on the standard algorithm of adding and subtracting fractions, using fraction conversion to decimals, and then applying the standard algorithm for decimals to solve the multiplication and division tasks. Prospective elementary teachers proposed some alternative mathematical techniques, such as using ratio or proportional reasoning for the multiplication task or using inverse proportion for the division task. The didactic techniques were mostly based on their mathematical techniques, and instructing pupils directly using standard algorithm was the common didactic technique discussed. Meanwhile, the prospective elementary teachers mentioned some technological-theoretical discourse to justify their practical block. One of common technological discourses was to explain that fractions were different from integers, and the operations of addition and subtraction of fractions

were not similar to the techniques used in the addition and subtraction of integers. Moreover, instructing pupils directly from those mathematical techniques became prospective elementary teachers' concern in building their didactic praxeology. From the explanation above, I inferred that the praxeology presented in the textbook concentrates more on praxis than logos. On the other hand, prospective elementary teachers also focused their discussion on praxis based on their experiences and on school textbooks, but some prospective elementary teachers could create alternative techniques to solve the tasks and relate these to didactic techniques to instruct the students. Meanwhile, the textbook offered almost no explicit technological-theoretical discourse as compared to prospective elementary teachers' discourses founded on their belief in teaching rational numbers as a process to explain the standard techniques.

Discussion and Conclusion

The present study sought answers to three research questions. First, it investigated what knowledge to be taught appears in the mathematical textbooks for teacher education; second, what taught knowledge was discussed by prospective elementary teachers during their collaborative work; and the third aim was to explain the relation between knowledge to be taught and taught knowledge. Regarding the first research question, the study shows that the textbook focuses only on presenting the mathematical tasks and techniques to solve those tasks. The common mathematical techniques proposed are based on the standard algorithm for fractions; then, they use conversion of fractions to decimals, and then apply the standard algorithm for decimals to solve the mathematical tasks. In supporting the standard mathematical techniques for the four operations, the textbook provides some didactic situations related to the use of diagrams or rectangle models, but how these can be implemented to construct pupils' mathematical knowledge of operations with fractions and decimals is not presented in detail. Indeed, one can say that the textbook still invokes the traditional approach for presenting the knowledge of rational numbers to be taught, and this is probably a standard model for mathematical textbooks in Indonesia (Wijaya et al., 2015; Wijayanti & Winsløw, 2017).

Wijaya et al., (2015), for instance, found that only about 10% of the tasks in the school textbooks are context-based tasks, and only 2% of the contextual tasks are reflection tasks, which are considered as the tasks with the highest level of cognitive demand. We may argue that there is a commonality among mathematical textbooks in Indonesia in that they focus more on the formal mathematical tasks together with the standard techniques or algorithms. However, textbooks play an essential role in the design of instruction (Alajmi, 2012). It is necessary to present sufficient praxeology in the textbooks, especially those for teacher education. The lack of mathematical technologies and theories presented in Indonesian textbooks could hinder prospective elementary teachers from dealing with advanced tasks such as division of fractions or decimals. Concerning the second research question, prospective elementary teachers focused on discussing the standard algorithm or techniques to solve the four operations of rational numbers. Especially with the tasks of adding and subtracting fractions, all pairs agreed to instruct pupils directly using the standard algorithm, and only a few participants suggested alternative mathematical and didactic techniques. It is also evident that most prospective elementary teachers discussed the didactic task of $t_{d2,f+}$ and $t_{d2,f-}$ based on the written answers given to the mathematical task of t_{2f+} and t_{2f-}. Therefore, they always mention that instructing students using the standard algorithm is a strategy to support student understanding of the concept of operations with rational numbers. What they may believe is contrary to the theory of mathematics education, which is developing today in the direction of realistic mathematics education (RME) (Freudenthal, 1991) or the theory of the "didactical situation" (Brousseau, 2002). Within those theories, learning mathematics is seen as a meaningful human activity, and real-life situations need to be an inseparable part of the process of mathematization. Similarly, prospective elementary teachers also propose standard techniques for solving mathematical tasks in HTT 2, and then instruct their pupils based on those techniques. Although some prospective elementary teachers do suggest alternative mathematical and didactic techniques, many still consider that the standard algorithm for multiplication and division of fractions constitutes the central praxeology for pupils to succeed in such tasks. Moreover, a lack of questioning of other ideas leads them to limit their discussion related to didactic technologies and theories. This condition has also been found in previous studies on prospective teachers' knowledge of rational numbers (Alenazi, 2016; Depaepe et al., 2015; Ma, 1999; Newton, 2008; Putra, 2016; Putra & Winsløw, 2018).

Prospective teachers' lack of mathematical knowledge leads them to experiences challenges in constructing didactic knowledge for teaching students (Depaepe et al., 2015). Many prospective elementary teachers failed to find a sufficient explanation to justify the standard techniques, especially in the case of division of rational numbers. In addition, the learning instruction given during teacher training was insufficient to support teachers' mathematical knowledge of rational numbers (Newton, 2008; Widjaja, Stacey, & Steinle, 2008).Based on the explanation to the first and second research questions, the relation between knowledge to be taught and taught knowledge is clearly visible. Prospective elementary teachers transpose what mathematical knowledge about operations of rational numbers presented in the textbook to the mathematical and didactic tasks presented in each HTT. They mostly apply standard mathematical techniques, such as $\tau_{1d\times}$ for the multiplication of fractions, and $\tau_{1d\div}$ for the division of fractions, and also consider modelling their didactic praxeology on that mathematical praxeology. It seems that the institution has lost the rationale behind the knowledge of rational numbers that is to be taught, and the learning process becomes 'monumentalistic' education, in which students, in this case prospective elementary teachers, are invited to contemplate bodies of knowledge, the rationale for which has perished over time (Chevallard in Bosch & Gascón, 2006). Of course, the occurrence of this transposition process could be caused by many factors, one of which could be the 'noosphere' in which the textbook author constructs the knowledge about the operation of rational numbers for the teacher education program. In addition, prospective elementary teachers' previous mathematical knowledge gained during their time at school could be the reason for the mathematical and didactical knowledge shared by these prospective elementary teachers. Finally, we conclude in this study that prospective Indonesian teachers create their mathematical and didactic praxeology based on standard techniques or procedures rather than on conceptual or theoretical discourse. Many prospective elementary teachers experience some difficulty and challenge in giving a justification for such a didactic situation as appears in each HTT. This situation is supported by the praxeology presented in the textbook; prospective elementary teachers are likely to transpose what mathematical knowledge they have learned during their time in teacher education. The implication of this study is that a textbook used in teacher education needs to emphasize not only the practical aspects but also the theoretical aspects. For example, in a textbook it is insufficient to present only an algorithm about the division of fractions; instead, the meaning behind that

algorithm should also be addressed. While prospective elementary teachers need an adequate background in mathematics, especially in the field of numbers and their operations, this should function to support them in developing better didactic praxeology. Since this study focuses only on the textbook and the teachers' mathematical knowledge shared during their collective work on two HTTs, I suggest conducting a further study to investigate how the textbook is used by teacher educators to instruct student teachers in a course related to this topic. Such a study could provide more detail about the didactic transposition process of knowledge to be taught into taught knowledge. In addition, this study has a limitation in terms of representation of rational numbers because the tasks focus only on one task about adding and subtracting fractions and another about multiplication and division of decimals. Therefore, a further study needs to address this limitation by designing more types of tasks with several representations of rational numbers.

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Video Explanations as a Useful Digital Source of Education in the COVID 19 Situation

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Abstract/Izvleček The paper presents the current state of scientific findings on flipped learning during the outbreak of COVID 19 and compares two models, the Chinese and the Slovenian. The portal www.*razlagamo.si* offers asynchronous video explanations that allow the learner to manage time independently and supportive conversations in which students synchronously, in one-to-one conversations communicate with student-teachers and in-service teachers. The quantitative overview of the video explanations is provided. Results will help teachers who use the principles of flipped classroom, and decision-makers who design the educational model for the future.

Video razlage kot uporaben element izobraževanja v COVID 19 situaciji V članku predstavljamo trenutno stanje znanstvenih dognanj o obrnjenem učenju med izbruhom virusa COVID 19 in primerjavo dveh modelov, in sicer kitajskega in slovenskega. Portal www.razlagamo.si ponuja asinhrone video razlage, ki učencem omogočajo samostojno upravljanje s časom, ter podporne pogovore, v katerih učenci sinhrono, v pogovorih s študenti pedagoških smeri in učitelji razrešujejo težave z učno snovjo. Ponudimo tudi kvantitativni pregled video razlag. Prispevek bo v pomoč učiteljem, ki poučujejo po načelih obrnjene učilnice in odločevalcem, ki razmišljajo o modelu izobraževanja v prihodnosti.

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Introduction

The World Health Organization (WHO) declared COVID 19 a global disaster on January 30, 2020 and declared it a pandemic on March 11, 2020. During the pandemic, the impact of e-learning became particularly important. In the emergency, many countries closed schools and switched to emergency remote teaching. Emergency remote teaching (ERT) is defined as a temporary shift from the face-to-face or hybrid mode of instruction to completely digital education, owing to external factors (in our case COVID-19) and where there is no time for preparation. Since it emerges as a response to an emergency, its primary aim is not to develop a robust educational ecosystem but to provide temporary access to instruction, along with instructors to provide support (Hodges et al., 2020). Therefore, ERT is about delivery modes, methods, and media. On the other hand, online learning is a well-known educational form and is planned beforehand. Online learning, sometimes called "e-learning" or distance learning, is a form that happens at a distance rather than within a classroom setting. It was developed to leverage technology and provide students with the opportunity to achieve degrees without the need to be on the premises (Hodges et al., 2020). Emergency remote teaching should be considered a temporary solution to an immediate problem. Teachers should "in these times (and all other times) think about not only the content of their teaching but also the medium they use" (Coeckelbergh, 2020, p. 3). The digital age has arrived and systems, including schools, are not yet ready for it. The scientific community and the EU support the principle of equal opportunities and thus, the development of open educational resources (OER) and also draw attention to the quality of resources. The effectiveness of emergency remote teaching measures is still under discussion (Viner et al., 2020). Despite the best efforts, a great many teaching staff have not previously had to develop the special skills required to create and deliver online learning and are required to upskill very quickly, exacerbating the challenge of sustaining the rate of learning and level of engagement. The COVID-19 outbreak exposed a significant variation in educators' readiness to use technology to support learners at a distance. The gap was noticed in both the international context (Trust & Whalen, 2020) and the Slovenian one (Skubic Ermenc et al., 2020). Owing to the vast number of studies regarding ICT in education, we tried to limit the literature to meta-analyses whenever possible. The research to date does not suggest that the use of ICT has a statistically significant impact on students'

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knowledge. Still, there are definite advantages of ICT in developing more autonomous learning (Hatlevik et al., 2018). A meta-analysis conducted by Clark et al. (2016) argued that ICT as a medium could promote productive learning. Means et al. (2009) conducted a meta-analysis study based on more than 100 ICT studies in education. They found that the most substantial positive effect on student knowledge was achieved through a combined teaching method using digital manipulators that promote active learning. Similar findings were provided by a recent meta-analysis, which suggests that the inclusion of ICT in education can have positive effects on administrators, teachers, and students (Baseer Safi, 2019). Researchers in this field continuously stress the importance of quality in e-learning materials. Clark and Mayer (2008) pointed out that content clarity and interactivity are not enough for the quality of e-learning materials and that interactive and dynamic elements can play a constructive or destructive role in the learning process. They can be a useful tool to ensure an active role for the learner, since they present data more clearly and promote in-depth understanding of the content; on the other hand, meaningless interactivity can lead to a loss of learner attention (Lipovec et al., 2017). Although research results in this area are inconsistent, the hypothesis that computers will play the role of cognitive facilitators in the classrooms of the future is widely accepted (Pérez-Sanagustín et al., 2017). During the COVID 19 situation, warnings that emergency remote teaching increases socioeconomic disparities were often raised. The impacts are particularly evident in the early years, which are critical to understanding, among students at risk, where it is difficult to make up for a lost time, and among students from culturally and linguistically diverse backgrounds. Research findings support this thesis. According to Scherer and Siddiq (2019), the gap in digital literacy caused by socioeconomic status is still smaller than the gap created by socioeconomic status in mathematics achievement (Scherer & Siddiq, 2019). Nevertheless, the Pearson correlation coefficient is 0.214 for digital literacy and socioeconomic status and explains about 17% of the variance within the sample. The same authors report that gender plays no significant role in ICT literacy (Siddiq & Scherer, 2019).

Flipped/inverted classroom

The flipped learning approach has become a popular pedagogy in many educational institutions around the world. During the coronavirus pandemic, flipped learning with premade video learning materials was often used (Lipomi, 2020). Students receive prepared materials, which they study asynchronously, and then clarify any ambiguities in synchronous communication with the teachers. Flipped learning is also recognized as an effective teaching method outside times of crisis (Najafi & Heidari, 2019). Wagner et al. (2020) defined the model of the reversed classroom as a teaching approach in which students first watch a video and then carry out further learning activities in school. The importance of quality video materials is particularly emphasized (Gordon, 2014). In a meta-analysis of 44 independent sources, Wagner et al. (2020) concluded that the flipped learning model for secondary school students is more effective than traditional teaching. The highest positive correlation between flipped learning and achievement was reported for STEM (Science, Technology, Engineering, Mathematics). Van Alten et al. (2019) similarly defined flipped learning or the inverted classroom as an approach in which "students first study teaching resources (e.g., watching online lectures) and then apply the knowledge in the classroom" (van Alten et al., 2019, p.1). Their meta-analysis shows that a well-designed inverted classroom in secondary education is a promising pedagogical approach for the future and has a small positive effect on achievement. Similar results were obtained by Zhu et al. (2019) for the primary school population. Among the main difficulties in using flipped learning is the heavy workload on teachers when creating inverted learning materials and lower activity levels among students when learning outside the classroom (Lo & Hew, 2017). Research on the factors that determine technology acceptance from the teachers' perspective has been conducted for some time (Scherer & Teo, 2019). Teachers' technology acceptance is a complex construct that is influenced by many factors. Roughly speaking, the acceptance of technology cannot be determined only by what schools offer teachers as an aid in the use of technology. A positive attitude towards technology is also determined by the spectrum of teachers' motivation tracks and internal and external beliefs about technology and its use. During the COVID 19 outbreak, the implementation of e-learning was not always smooth and efficient, since schools have limited experience with e-learning, especially when teachers do not understand the principles of remote teaching (Almanthari et al., 2020).

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The Chinese experience with education during the COVID 19 lockdown

In March 2020, a handbook was published describing the Chinese experience with providing learning during the outbreak of COVID 19. Huang et al. (2020) describe how the Chinese Ministry launched the "Disrupted classes, undisrupted learning" initiative, which provided emergency remote education to more than 270 million students. The strategies used by teachers varied widely, from group use of videoconferencing systems such as *Zoom* or *MS Teams*, to synchronous, video-supported one-to-one teaching. The handbook also described the diverse materials for the students that the educators in China used. In particular, it emphasized the widespread use of pre-recorded lectures (Huang et al., 2020). Huang et al. recommended open digital learning resources that include a wide range of digital resources, including audio and video simulations, animations, etc. They also listed five criteria for learning resources that must be met in a situation such as COVID 19 (Huang et al., 2020, p. 22):

(a) The relevance of the content: Learning resources must be strongly linked to the learning objectives and content and be sufficiently compelling for students.

(b) Appropriateness of the level of difficulty: The content must be varied in difficulty to avoid cognitive overload of the learners.

(c) Adequacy of the structure: The structure of the learning materials must be concise and rational so as not to "confuse" the learners.

(d) Suitability of the chosen medium: The medium for younger students must be carefully selected to avoid causing visual overload.

(e) Adequacy of resource organization: Various resources (e.g., videos, animations, text, virtual experiments) must be structured and clearly presented from the learner's point of view.

In China, all teachers were given open access to digital textbooks during the COVID 19 crisis. The structure of the organizational forms of online teaching is presented in the handbook, as well. We highlight the section on asynchronous instruction, where it affirms that "teachers must be able to produce learning resources such as videos and design online learning activities" (Huang et al., 2020, p. 28). The authors also note the seven core elements of effective crisis education.

(1) Providing an active internet network that enables all students to (a) learn synchronously via video conferencing, (b) use (view, download) interactive

learning resources (videos, games, etc.), and (c) collaborate with classmates via social networks.

(2) Selecting user-friendly tools with particular care to ensure that students and parents are not burdened with too many applications and platforms.

(3) Schools should require teachers to use the same platforms in a coordinated way.

(4) Providing appropriate interactive digital resources, such as video micro-courses, e-books, simulations, animations, quizzes, and games.

(5) Guiding students in the use of active learning methods, including online communities that allow for regular online socializing to avoid feelings of loneliness and helplessness.

(6) Promoting effective practices that enable diverse teaching strategies, such as discussion, learning by doing, and experiential learning.

(7) Providing fast support services for teachers and students.

(8) Promoting cooperation between all stakeholders (e.g., ministries, research organizations, schools, and parents) (Huang et al., 2020, p. 40).

Razlagamo.si

The website www.razlagamo.si was established in Slovenia in March 2020. The name of the portal is a word game in the Slovenian language, meaning explaining to each other; it emphasizes the collaborative and open sharing nature of the portal. Everyone working in the field of education in Slovenia was facing challenges arising from a new and unknown situation. Three faculties of the University of Maribor which educate student-teachers—the Faculty of Natural sciences and Mathematics, the Faculty of Education, and the Faculty of Arts—have designed a joint educational support point www.razlagamo.si, which is intended to provide mutual assistance in the field of education. The essential elements of the portal are video explanations accompanied by interactive digital textbooks and supportive conversations. In a supportive conversation, the primary and secondary school student asks a question that a volunteer, student-teacher, or teacher answers. In this communication, minor problems are solved individually. There are different types of supportive conversations: sometimes, it is possible to answer a question statically, with text or an image; sometimes it is necessary to record a video as an answer, and other times a synchronous conversation is needed to clarify the question. The conversations take place in the Microsoft Teams application.

The student fills out a simple application form and receives a user name and password for enrolling in the *Razlagamo.si* MS Teams. A quick video guide is available. By clicking on the individual subject, the student is accepted into the team where the discussions are held. The conversations cover more than 100 subjects taught in primary, elementary and secondary school, including courses in music school. The specialized team also offers advice on learning difficulties. Students from all three faculties and various disciplines take part in the conversations, from student teachers of natural sciences, to those from the social sciences and psychologists. At present, about 250 volunteer students and some teachers are involved. Primary and secondary school students are directed to the interactive materials and the collection of video explanations, which provide additional help. This collection of materials and video explanations was created in a way that follows the structure of the validated, freely accessible advanced i-textbooks at www.iucbeniki.si (Pesek et al., 2014) and is therefore in line with the curriculum. The numbers show an increase in the use of Slovenian i-textbooks in Covid, 6x increase in daily visitors.

Video Explanations

Videos are often used in flipped learning, as mentioned before. Nevertheless, a video is also an effective tool in more traditional teaching. A video explanation is a video that follows the principles of the method of explanation. The explanatory method, or the Socratic method, has traditionally been one of the most widely used teaching methods; it is relatively effective in various fields (Overholser, 2018) and approaches to teaching and learning, including e-learning (Liu, 2019). Delić and Bećirović (2016) defined the Socratic method as "pedagogy that helps students to critically reflect on their understanding of a particular issue with guided questions" (Delić & Bećirović, 2016, p. 516–517). In a synchronous use of this method, the teacher usually lets the students think about the answer for some time after the question is asked and then offers some of the expected (correct or incorrect) answers. The Socratic method used in an asynchronous video explanation follows similar principles. Video explanations can additionally use multimedia tools (e.g., videos of natural phenomena, videos of virtual manipulators, virtual versions of experiments or screencasting). Usually, a video explanation contains a combination of these elements. On *Razlagamo.si* there are two types of explanations: (a) explanations for developing concepts and (b) explanations for knowledge consolidation. The video explanations for the development of concepts observe the following guidelines:

The video explanation contains a maximum of two fundamental concepts, and is not longer than 15 minutes; it provides a brief motivation, emphasizes understanding, and consists of summary elements. It should also include an explanation of up to four examples. In the consolidation video explanation, however, the guidelines are as follows: Consolidation is prepared only for fundamental concepts; it should not exceed 10 minutes, and, again, emphasizes understanding. When explaining, the lecturer should use correct terminology, speak in moderate rate, write legibly, and give a guide to materials and objectives in the introduction. During the explanation, the lecturer can also ask questions as if students were present. Video explanations should focus on key concepts of the content; they should include a summary at the end with an overview of the most essential knowledge acquired. Lecturers are encouraged to use innovative approaches and interactive online i-textbooks. When using the ICT tools needed to prepare a video (e.g. recording and editing software), we have not restricted lecturers to any one software. However, we did provide them with technical assistance. The presenters were very inventive and used a variety of tools, from tablets, webcams and mobile phones, to video footage in front of the blackboard. The situation in Slovenian schools was very diverse during lock down. Some schools immediately switched effectively to emergency remote teaching. Teachers prepared interactive materials, taught in video conferences, developed innovative ways of giving feedback and adapted lessons according to the specific needs of students. Some schools did not do so well; they needed more time. However, there was no time during the pandemic. There was no time to train teachers to work with new ICT tools; there was no time for detailed instruction on how to work. That is why the spirit of solidarity came to life. Those teachers who had sufficient skills and knowledge regarding emergency remote teaching helped colleagues. Unfortunately, this assistance is by nature limited to smaller collectives (e.g. schools). There was an urgent need for an environment that would allow sharing to reach ALL teachers and students. Such an environment is Razlagamo.si.

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Methodology

The purpose of the research is to answer the following two research questions.

    (1) To what extent does *Razlagamo.si* follow the guidelines written in Huang et al. (2020)?

    (2) What is the subject distribution of the video explanations on *Razlagamo.si*?

Using social science methodology and the methods of analysis, synthesis and comparison, we compared the Razlagamo.si portal with the guidelines based on the Chinese experience. Comparison is a standard research method with outstanding merit and with widespread application. Comparison as a scientific method refers here to the research approach in which two or more cases are explicitly compared concerning a particular phenomenon or along a specific dimension to investigate parallels and differences between the cases. We are aware of the importance of cultural differences in the use of the comparative method (Smelser, 2013) and list these as one of the study limitations. The type of comparison used is universalizing comparison (Azarian, 2011, p. 18), since the aim is not only to reveal a description of differences and similarities but also to extract insights about the causal relationships responsible for the observed similarities and differences.

In the empirical part of the research, we used a quantitative, non-experimental method of pedagogical research, to answer questions about the subject distribution of the video explanations on *Razlagamo.si*.

Results and discussion

Compliance with Huang et al. (2020) education guidelines in the COVID 19 situation
Table 1 shows the coordination of the website *Razlagamo.si* with the core elements that are recommended for education in the COVID 19 situation (Huang et al., 2020). We use the following indicators: + + for full consistency, + − for partial consistency and − − for no consistency.

Table 1 shows that the common education point, the website *Razlagamo.si*, succeeds in following the Chinese recommendations for education during the COVID 19 crisis. The crucial point is the promotion of effective teaching and learning methods and cooperation with formal institutions outside the University of Maribor.

We believe that over time, there will be improvement in these areas as well since it is expected that *Razlagamo.si* will move from a voluntary movement to a slightly more structured and state-supported form.

Table 1: *Compliance of* Razlagamo.si *with core elements of the Chinese recommendations.*

Core element	Compliance	Explanation
Providing an active internet network that enables all students to (a) learn synchronously via video conferencing, (b) use (view, download) interactive learning resources (videos, games, etc.), and (c) collaborate with classmates via social networks.	+ +	*Razlagamo.si* Supportive Conversations use MS Teams, which enables synchronous teaching. In the video explanations part of *Razlagamo.si,* Arnes online classrooms enable the use of interactive materials. *Razlagamo.si* is also active on Facebook, Twitter and Instagram, which enables participation on social networks.
Selecting user-friendly tools with particular care to ensure that students and parents are not burdened with too many applications and platforms. Schools should require teachers to use the same platforms in a coordinated way.	+ +	A single common educational point with uniform tools is used.
Providing appropriate interactive digital resources such as video micro-courses, e-books, simulations, animations, quizzes and games.	+ +	Razlagamo.si contains open, free interactive i-textbooks www.iucbeniki.si/
Students should be guided in the use of active learning methods, including online communities that allow for regular online socialising to avoid feelings of loneliness and helplessness.	+ +	An online community is provided in the supporting conversations team *Counseling when having trouble with learning.* The team members are coordinators and students of psychology and pedagogy at the Faculty of Arts, University of Maribor; they support struggling students in learning and are available for students to optimise their learning methods.
Promotion of effective practices that enable diverse teaching strategies, such as discussion, learning by doing, experiential learning, etc.	– –	There is currently no such promotion on the portal.
Providing fast support services for teachers and students.	+ +	The average response time in supporting conversations is less than one hour between day hours (between 8 a.m. and 9 p.m); the average response time to e-mails sent to razlagamo@um.si is less than one day.
Promotion of cooperation between all stakeholders (e.g. ministries, research organisations, schools, parents).	+ –	The joint educational point is supported by all institutions that are responsible for the Slovenian education system and all stakeholders in that arena (Ministy of Education, Science and Sports, National Educational Institute, schools, and parents), but there is little active engagement from formal institutions.

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Subject distribution of video explanations

On May 11, 2020, there were 583 video explanations uploaded to *Razlagamo.si*, on Nivember 15 the number is reaching 1000. Table 2 shows the distribution of the number of video explanations in May regarding the education vertical. Some subjects only have placement in the three-year period of elementary school (for example, Natural Sciences is available only for 6th and 7th grade). Table 2 thus displays the number of video explanations in three-year periods (triads) — for elementary school, which lasts 9 years in Slovenia — and separately for high school, which lasts four years in Slovenia. The table does not show 12 video explanations that relate to general learning strategies and cannot be classified in a specific triad or in the high school, since they are useful everywhere.

Table 2: The number of video explanations (VE).

	elementary school			high school
	1st triad	2nd triad	3rd triad	
No. of VE	86	125	260	90

As expected, most video explanations are dedicated to the 3rd triad of elementary school. Our results are consistent with the findings of other research. After reviewing several studies on reverse learning in primary, elementary and secondary school, Lo and Hew (2017) found that inverted classrooms are most common among students between the ages of 13 and 18. Students aged from 12 to 15 years are already sufficiently independent to manage distance learning, but they still need more guidance than high school students. Table 3 shows the distribution of video explanations by subject, taking into account only subjects from the curriculum in elementary and secondary public schools. Therefore, the video explanations for music school (2 VE), general instructions for learning (12 VE) and the international matura in mathematics (34 VE) were not considered. In addition, we have included the elective course Computer Science. Subjects for which there are no video explanations on *Razlagamo.si* (e.g., Slovene, German, History) were not included in Table 2. In mathematics and physics, which have video explanations in both elementary and secondary schools, we have added the number of hours provided in the curriculum. For Mathematics, for example, that is 1378 hours in elementary school and an additional 560 hours in secondary school.

The weighted value of the video explanations was calculated as an average between the number of VE and the number of hours in the curriculum. The resulting value was multiplied by one hundred, and the standardized value was calculated for ease of presentation. Note that the standardized value does not indicate how much of the subject is covered by video explanations, since video explanations overlap in certain subjects (e.g., mathematics). For example, trapezoid video explanations could be prepared by several teachers.

Table 3: The distribution of video explanations, sorted by subject.

Subject	No. of VE	Curricular No. of school hours	Standardised value
Mathematics	389	1878	21
Physics	31	344	9
Science	13	175	7
English	6	656	1
Engineering and technology	6	140	4
Biology	7	116	6
Chemistry	2	134	1
Environment	25	315	8
Society	5	175	3
Music	22	417	5
Visual art	10	487	2
Sport	2	834	0
Geography	4	221.5	2
Science and technology	9	210	4
Computer science	4	105	4

We find that Mathematics has the highest standardized value, followed by Physics, Environmental studies, and Science, while Sports, Chemistry and English have the lowest standardized values. The Slovene is not present. One of the possible reasons for omitting this (very important) subject lies in the analysis of e-textbooks for the Slovene language done by Valh Lopert and Koletnik (2019). The findings indicate an unbalanced representation of different types of tasks, with short answer types in the majority, the task type that is the least popular among students. To answer the last research question, we have grouped the subjects by fields. We used the ARRS classification (Slovenian Research Agency, 2017). This classification consists of natural sciences (mathematics, physics, chemistry, biology, computer science), engineering (science and technology, engineering and technology), social sciences (geography, social studies, environmental studies), and humanities (English). Arts and sports (visual arts, music) have been assigned to their own group, named others.

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Environmental studies is a subject that covers both the social sciences and the natural sciences, so we have included it evenly in both areas with half of the number of VE in each. In science and technology, we included three-quarters of the explanations in the natural sciences and one quarter in engineering. Table 4 shows the distribution by field separately for elementary and high school education.

Table 4: VE distribution by field.

		Natural sciences	Engineering	Social sciences	Humanities	Other
ES	No. of VE	402.25	8.25	21.5	6	34
	No. of school hours	2297	192.5	554	656	1738
	Standardized value	18	4	4	1	2
HS	No. of VE	63				
	No. of school hours	770				
	Standardized value	8				
Total	No. of VE	465.25	8.25	21.5	6	34
	No. of school hours	3067	192.5	554	656	1738
	Standardized value	15	4	4	1	2

Legend: ES: Elementary School, HS: High School

We find that the standardized value of Natural sciences is by far the highest of all groups. This finding is consistent with a meta-study conducted by Wagner et al. (2020). They discovered that STEM (Science, Technology, Engineering and Mathematics) is more suitable for flipped classroom than other areas. In our study, results are similar for elementary school, as well. Even though Cotič et al. (2019) report increased 4th-grade student interest in science courses when ICT was present, Bulić and Blažević (2020) found no significant differences in 8th-grade student motivation when learning online or participating in modern classroom instruction.

Suggestions for teaching during emergencies and mandatory social distancing

Israeli and English researchers have formulated a proposal to restart the systems (economic, educational, and other systems) that will allow safe implementation even in the case of new waves of virus outbreaks (Alon et al., 2020). The proposal is based on the "weak spot" of the coronavirus, namely the three-day latency period. Current findings show that an average of three days' elapses between infection and the time when a person becomes contagious and can thus spread the virus to others. Therefore, they propose four days of work/school, followed by ten days of work/school from home.

Our proposal to put the school system back into operation will be slightly modified in accordance with organizational optimization. We propose the introduction of "shift teaching" with weekly shifts:
- two groups of students alternate weekly,
- in the week when one group is at home in remote teaching mode, the other group is at school, participating in a classic form of teaching.

This method provides a 9-day quarantine after five days of work at school and thus paints a clear picture of possible infections. The same model is already being used by Austrian schools for this school year (Almanthari et al., 2020). The proposed method is also an ideal way to use the inverted classroom method.

Conclusion

Because of the disruption of the social context in classrooms and schools, student relationships with peers, teachers, school leaders, and other staff have been disrupted—the familiar settings that support learning have been disrupted (Alexander et al., 2020). As the literature has shown, obstacles to e-learning can involve several problems: technology and internet access, the lack of an e-learning and assessment curriculum, and the lack of tools for effective student assessment limit what educators can teach. The motivation for online learning, confidence in the use of e-learning technology, and teachers' attitudes towards online learning all influence how and how much a student will learn.

All these barriers need to be taken into account when faced with an event such as a pandemic that forces teachers and students to immediately adapt to a different way of teaching and learning.

Razlagamo.si provides ALL students (and ALL teachers) with open educational resources (advanced interactive textbooks, Khan-style video explanations and guidelines for cyber-flipped asynchronous conceptual teaching and learning). Not all students can participate in distance learning in real-time (Lowenthal et al., 2020). Students' reasons may be economical (e.g. lack of physical space or technology in families with multiple siblings) or cognitive (e.g. less attention from learners and/or parents and carers need the time to support their children's learning). Razlagamo.si follows an innovative teaching approach (cyber-flipped learning with a high degree of student engagement in the content, collaboration and the creation of teaching and learning communities).

This paper shows that the Slovenian joint educational point Razlagamo.si is largely in line with the recommendations of Chinese researchers on how to ensure quality of learning even during the outbreak of a pandemic such as COVID 19 (Huang et al., 2020). We also note that the principles of inverted classroom teaching can be maintained during a crisis, since the STEM fields are strongly dominant, especially mathematics. Given the exceptional success of the support point and because of the research on the proven value of reverse learning in classroom teaching throughout the educational vertical, we have decided that the point will remain active beyond the end of the crisis. In fact, the Razlagamo.si model is also effective in situations where only a part of the student population is involved in distance learning. The joint educational point will help teachers prepare materials according to flipped learning principles even in a non-crisis situation (e.g., for sick students, student-athletes, or students with distinct status).

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Poučevanje predmeta šport z vidika kompetenc razrednih učiteljev

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Izvleček/Abstract Namen raziskave je bil ugotoviti, ali se učitelji razrednega pouka čutijo dovolj kompetentne za izvajanje predmeta šport ter kako je kompetentnost povezana z delovno dobo in športno dejavnostjo učiteljev. Raziskava je temeljila na neslučajnostnem namenskem vzorcu 220 učiteljev razrednega pouka. Rezultati kažejo, da učitelji razrednega pouka najvišje vrednotijo kompetence, ki se nanašajo na načrtovanje, organizacijo, izvedbo in evalvacijo pouka športa. Manj kompetentne se čutijo predvsem, ko gre za vključevanje otrok s posebnimi potrebami v športno vadbo. Športno najbolj dejavni učitelji in tisti z najdaljšo delovno dobo kompetence ocenjujejo višje kot manj športno dejavni učitelji in tisti z manj delovne dobe.

The Physical Education Teaching in Terms of the Elementary Teachers' Competencies The main aim of this study was to find out how elementary teachers evaluate their competence for teaching Physical Education (PE) regarding seniority and physical activity involvement. The study was conducted on a non-randomized sample of 220 elementary teachers teaching PE. The results show that the highest assessed competences include the ability to plan, organize, implement and evaluate sports lessons. Teachers rated as lowest those competencies related to integrating and working with children with special needs in PE lessons. The most physically active teachers and those with the longest seniority rate competencies higher than less active teachers and those with shorter seniority.

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Introduction

Vloga učitelja je ključna za uspešen razvoj kompetentnosti pri učencih, zato je zelo pomembno, da so v svojem poklicu kompetentni učitelji (Komisija Evropskih skupnosti, 2007). Učitelj na učence vpliva ne le s skupkom pridobljenih znanj, spretnosti, sposobnosti, pač pa tudi s svojo osebnostjo in zgledom, zato sta strokovnost in profesionalnost tukaj še toliko bolj pomembna. Razvoj kompetentnosti se nikoli ne konča, zato mora učitelj poskrbeti, da njegove kompetence, ki jih je že pridobil, nikoli ne zastarajo, hkrati pa mora stremeti k pridobivanju novih kompetenc na najrazličnejših področjih, to pa je v veliki meri pogojeno z njegovo pripravljenostjo in željo po vseživljenjskem učenju (Laursen, 2003). Le tako bo namreč lahko uporabil pridobljena znanja in spretnosti za uspešno, kreativno, inovativno in etično delovanje v raznolikih okoliščinah tako v poklicnem kot v zasebnem delovanju (Frey, 2004, povz. po Kettenis, 2014; Štirn Janota, 2012). Kompetence predstavljajo večplastne mreže znanj, veščin, teženj in vrednot, ki jih ima posameznik in ki se lahko izgrajujejo, kadar ima posameznik dobro osnovane temelje z nekega področja, primarne veščine, splošna stališča in načine spopadanja z reševanjem novih situacij, posplošenih stališč in spoznavnih stilov (Marentič Požarnik, 2006). Med ključne kompetence učitelja se uvrščajo usposobljenost za nove načine dela v razredu, usposobljenost za nove naloge, delo zunaj razreda, na šoli in s socialnimi partnerji, usposobljenost za razvijanje novih kompetenc in novega znanja pri učencih, razvijanje lastne profesionalnosti ter uporaba informacijsko-komunikacijske tehnologije (Komisija Evropske skupnosti, 2007).

Kompetence učiteljev športne vzgoje se kažejo na štirih ločenih, pa vendar tesno prepletenih področjih, to so: temeljna in specifična športna znanja, strokovna pedagoška znanja, ki vključujejo načrtovanje, poučevanje in ocenjevanje, učiteljev značaj, stališča in osebnostne lastnosti ter visoka stopnja obvladanja učnega in didaktičnega procesa (Casolo idr., 2019). Za uspešno in učinkovito poučevanje športa so potrebne številne specifične kompetence (Kovač, Sloan, Starc, 2008; Štemberger idr., 2009; Stojanović, Zdravković, 2012; Landin, 2002; povzeto po Awad in Eid, 2013), ki se nanašajo na:

– poznavanje otrokovega razvoja s poudarkom na značilnostih telesnega in gibalnega razvoja;
– skladno s tem na načrtovanje, pripravo, organizacijo, izvedbo ter evalvacijo rednega pouka športa in drugih športnih dejavnosti v šoli;

- poznavanje različnih področij in vsebin predmeta šport, metodičnih postopkov ter sposobnost demonstracije športnih prvin;
- uporabo informacijsko-komunikacijske tehnologije pri športu;
- izbiro in uporabo različnih didaktičnih strategij pri poučevanju predmeta šport;
- načrtovanje in oblikovanje varnega učnega okolja ter poznavanje dejavnikov varne vadbe;
- posredovanje, utrjevanje, preverjanje ter evalvacijo teoretičnih in gibalnih znanj;
- povezovanje športa z drugimi predmeti ter
- delo z otroki s posebnimi potrebami in z nadarjenimi pri športu.

Hardman, Murphy, Routen in Tones (2014) opozarjajo, da večina raziskav s področja poučevanja športne vzgoje kaže na pomanjkljivosti na področju priprave učiteljev na pouk ter na nizko stopnjo motivacije učiteljev za gibalno aktivnost. V večini držav ugotavljajo, da učiteljem težave pri poučevanju športa predstavljajo pomanjkanje strokovnosti, neustrezen nadzor nad prakso, pomanjkanje nadzora glede kakovosti izobraževanja in pomanjkanje nadaljnjega izobraževanja učiteljev, čemur mu pripisujejo velik pomen.

Avtorica Štemberger (2003) je opredelila in raziskala dvanajst kazalcev kakovosti, prek katerih je med drugim dobila vpogled v kompetentnost razrednih učiteljev prvega vzgojno-izobraževalnega obdobja na področju poučevanja športa. Razredni učitelji predmet šport uvrščajo med tri najljubše predmete za poučevanje, lastne sposobnosti za poučevanje predmeta šport pa vrednotijo dokaj visoko (Šlajkovec, 2016). Slednje ugotavlja tudi Semič (2014), saj se kar 80 % sodelujočih razrednih učiteljev opisuje kot *kompetentni* za poučevanje tega predmeta, kljub visokemu vrednotenju lastne usposobljenosti učitelji priznavajo, da tudi sami zaznavajo določena vsebinska področja, za katera se čutijo manj usposobljeni. Učitelji se počutijo *najmanj kompetentni* za poučevanje vsebin plesa in plesnih iger, gimnastične abecede in gimnastike ter iger z žogo in malih športnih iger (Štemberger, 2003;

Semič, 2014; Šlajkovec, 2014; Vodovnik, 2014); podobno tudi Obeda (2018) izpostavlja gimnastiko in ples kot najzahtevnejši vsebini.

Primerjave raziskav (Štemberger, 2003; Skribe Dimec, 2006; Stopar, 2007; Šlajkovec, 2016) kažejo, da se področja, za katera se čutijo učitelji razrednega pouka manj usposobljeni, v zadnjem desetletju niso bistveno spremenila. Gre za področje prilagojenega dela z otroki s posebnimi potrebami ter področje vodenja, organizacije in evalvacije športnih tekmovanj.

Učitelji razrednega pouka ustno izmenjavanje informacij s športnimi pedagogi in sodelovanje z drugimi razrednimi učitelji vrednotijo kot primarni vir novega znanja (Štemberger, 2003; Šlajkovec, 2016; Vodovnik, 2014), pri čemer pa moramo poudariti, da rezultati raziskav kažejo, da postaja zaradi napredka tehnologije in vključevanja IKT v vzgojno-izobraževalni proces med učitelji razrednega pouka vse bolj priljubljena oblika nadgradnje znanja uporaba internetnih virov, ki so se jih učitelji v preteklosti redkeje posluževali. Isti avtorji ugotavljajo, da strokovna literatura med učitelji razrednega pouka ni preveč priljubljena.

Jurak, Kovač in Strel (2004) opozarjajo na določene pomanjkljivosti na področju načrtovanja in organizacije pouka športa, kljub temu da učitelji razrednega pouka te kompetence vrednotijo kot odlične. In ravno vsebine s področja načrtovanja in organizacije športnovzgojnega procesa so tiste, kjer bi si učitelji želeli več dodatnega izobraževanja. Učitelji se pri načrtovanju športnovzgojnega procesa premalo poslužujejo športnovzgojnih kartonov in informacij, ki jih je mogoče pridobiti z opisno oceno, izpostavljajo pa tudi pomanjkljivosti na področju diferenciacije in individualizacije (Štemberger, 2003; Štemberger idr., 2009). Po drugi strani pa Husain idr. (2014) ugotavljajo, da učiteljem športne vzgoje primanjkuje znanj za motiviranje učencev za sodelovanje pri športni vzgoji.

Učitelji razrednega pouka se zavedajo, da sta za izboljšanje lastne kompetentnosti in s tem učnega procesa pomembna profesionalen razvoj in vseživljenjsko izobraževanje (Jager, 2012; Žalik, 2009). Zaskrbljujoče pa je, da se visok odstotek sodelujočih v raziskavah redko udeležuje programov strokovnega izobraževanja in usposabljanja, še redkeje pa izobraževanj in usposabljanj, ki so vezana na področje športa (Štemberger, 2003; Šlajkovec, 2016; Vodovnik, 2014).

Kljub aktualnosti problematike je področje kompetenc razrednih učiteljev za poučevanje predmeta šport do sedaj skromno raziskano, zato smo se odločili, da izvedemo novo raziskavo. Glavni namen raziskave je bil ugotoviti, kako učitelji razrednega pouka vrednotijo lastno kompetentnost za poučevanje predmeta šport. Ob tem nas je zanimalo, kakšno vlogo imata pri tem delovna doba ter njihovo lastno ukvarjanje s športom. Na osnovi dosedanjih raziskav predpostavljamo, da se razredni učitelji čutijo dovolj kompetentni za poučevanje predmeta šport, da kompetentnost narašča z delovnimi izkušnjami, da se športno bolj aktivni čutijo bolj kompetentni za poučevanje športa.

Metode

Raziskovalni vzorec

Raziskava je temeljila na neslučajnostnem namenskem vzorcu, v katerega so bili vključeni učitelji razrednega pouka, ki poučujejo predmet šport. Zajemal je 220 učiteljev, med katerimi so prevladovale predstavnice ženskega spola (93,6 %). Med anketiranimi prevladujejo učitelji, stari 45–55 let (32,1 %), sledijo jim učitelji, stari 35–45 let (29,3 %), starih 55 let in več je bilo 20,3 %, najmanj je bilo učiteljev starih 25–35 let (18,3 %). Največ učiteljev je imelo visokošolsko univerzitetni izobrazbo (81,6 %), medtem ko je bilo tistih z magisterijem stroke 18,3 %. Glede na delovno dobo je bilo največ učiteljev z 20 leti delovne dobe in več (38,64 %), sledili so učitelji z delovno dobo do 10 let (31,36 %), medtem ko je bilo učiteljev z 11–20 leti delovne dobe 30 %.

Postopki zbiranja podatkov

Zbiranje podatkov je potekalo prek anketnega vprašalnika, ki smo ga razdelili šolam in prek spletne aplikacije 1KA (orodje, ki omogoča kreiranje neomejenega števila anket), katere povezavo smo po elektronski pošti posredovali ravnateljem osnovnih šol. Sodelovanje v anketi je bilo prostovoljno in anonimno. V raziskavi so sodelovali le učitelji razrednega pouka. Zbiranje podatkov je potekalo leta 2019 na osnovnih šolah v Podravju.

Vsebinsko-metodološke značilnosti instrumentov

Anketni vprašalnik je bil sestavljen na podlagi dosedanjih raziskav, ki so jih opravile avtorice Štemberger (2003), Šlajkovec (2016) in Stopar (2007). Anketni vprašalnik je razdeljen na pet sklopov in vsebuje vprašanja zaprtega in odprtega tipa. V prvem sklopu anketnega vprašalnika so vprašanja o objektivnih podatkih učiteljev (spol, starost, stopnja izobrazbe, delovna doba). Drugi sklop anketnega vprašalnika se nanaša na vrednotenje lastnih kompetenc za poučevanje predmeta šport, pri čemer so razvitost kompetenc vrednotili s pomočjo štiristopenjske ocenjevalne lestvice. Deskriptivno izraženim stopnjam v ocenjevalni lestvici smo za potrebe obdelave priredili številske vrednosti od 1 do 4, pri čemer število 1 označuje popolnoma nerazvito kompetenco, število 2 delno razvito kompetenco, število 3 zelo razvito kompetenco in število 4 popolnoma razvito kompetenco. V tretjem sklopu so morali učitelji med vsebinami predmeta šport, kot so navedene v učnem načrtu, izbrati tiste, ki jih najraje izvajajo, ki jim predstavljajo največ težav, in navesti razloge za težave pri izvajanju določenih učnih vsebin. Četrti sklop anketnega vprašalnika se nanaša na vrednotenje lastne športne aktivnosti učiteljev, v katerem so učitelji ovrednotili svojo telesno pripravljenost, pogostost in vzroke ukvarjanja s športom ter navedli šport(e), s katerim(i) se najpogosteje ukvarjajo. Peti sklop anketnih vprašanj je namenjen preverjanju udeleževanja dodatnih strokovnih izobraževanj in usposabljanj na področju športa.

Metode obdelave podatkov

Podatki so bili obdelani s programom SPSS 27 za računalniški operacijski sistem Windows. Izračunane so bile aritmetične sredine (AS) in standardni odkloni (SO) vrednotenja lastnih kompetenc za poučevanje predmeta šport. V nadaljnjo analizo smo vključili le pet najvišje ovrednotenih in pet najnižje ovrednotenih kompetenc.

Sodelujoče smo glede na delovno dobo razdelili v tri kategorije: do 10 let, med 11 in 20 let ter več kot 20 let. Glede na čas trajanja športne dejavnosti učiteljev na dan smo sodelujoče prav tako arbitrarno razdelili v tri kategorije, in sicer: manj športno

dejavne (< kot 30 minut), srednje športno dejavne (30–45 minut) in zelo športno dejavne (> kot 45 minut).

Za ugotavljanje razlik v vrednotenju kompetenc glede na delovno dobo in športno dejavnost učiteljev smo uporabili enosmerno analizo variance (ANOVA). Za natančnejšo opredelitev statistično značilnih razlik med skupinami smo uporabili Scheffejev post-hoc test. Statistično pomembnost razlik smo ugotavljali na ravni tveganja $p < 0,05$.

Rezultati in razprava

V tabeli 1 so predstavljeni rezultati aritmetičnih sredin in standardnih odklonov vseh kompetenc, ki so jih učitelji ocenjevali v anketnem vprašalniku. Kompetence so v tabeli 1 razvrščene po velikosti aritmetičnih sredin od najvišje do najnižje ocenjene. Med najvišje ocenjene kompetence sodijo sposobnost načrtovanja, organizacije, izvedbe in evalvacije pouka športa (AS = 3,42), sposobnost oblikovanja in posredovanja informacij učencem in staršem (AS = 3,32), poznavanje in razumevanje temeljnih pojmov s področja športa (AS = 3,31), poznavanje uradnega učnega načrta za predmet šport in njegove uporabe v praksi (AS = 3,30) ter sposobnost preverjanja in ocenjevanja znanja pri predmetu šport (AS = 3,30).

Tabela 1: Aritmetična sredina in standardni odklon posameznih kompetenc za poučevanje predmeta šport.

Kompetenca	N	Srednja vrednost	Standardni odklon
K 9: Sposobnost načrtovanja, organizacije, izvedbe in evalvacije pouka športa (letna priprava, tedenska priprava, priprava na učno uro).	220	3.42	0.804
K 19: Sposobnost oblikovanja in posredovanja informacij učencem in staršem.	220	3.32	0.776
K 5: Poznavanje in razumevanje temeljnih pojmov s področja športa.	220	3.31	0.712
K 8: Poznavanje uradnega učnega načrta za predmet šport in njegove uporabe v praksi (učni cilji, učne vsebine, standardi znanja, didaktična priporočila).	220	3.30	0.794
K 16: Sposobnost preverjanja in ocenjevanja znanja pri predmetu šport.	220	3.30	0.806
K 3: Poznavanje in razumevanje športne dejavnosti za oblikovanje zdravega življenjskega sloga in izboljšanja kakovosti življenja.	220	3.29	0.720

K 22: Poznavanje osnovnih načel varnosti (primerna oprema, zaščita prostora, varovanje).	220	3.28	0.778
K 15: Sposobnost uporabe različnih učil in informacijskih virov.	220	3.27	0.787
K 18: Sposobnost spremljanja in vrednotenja napredka učencev pri predmetu šport.	220	3.26	0.736
K 14: Sposobnost priprave in uporabe didaktičnih gradiv pri predmetu šport.	220	3.25	0.790
K 4: Poznavanje in razumevanje športne dejavnosti za razvoj otrokovih bioloških, psiholoških in socialnih dimenzij.	220	3.24	0.776
K 6: Poznavanje različnih področij in vsebin predmeta šport.	220	3.22	0.733
K 21: Sposobnost načrtovanja in oblikovanja varnega učnega okolja ter poznavanje dejavnikov varne vadbe.	220	3.21	0.777
K 17: Sposobnost preverjanja in vrednotenja gibalnih sposobnosti in telesnih značilnosti pri predmetu šport.	220	3.20	0.762
K 13: Sposobnost medpredmetnega povezovanja predmeta šport z drugimi predmeti.	220	3.19	0.860
K 10: Sposobnost načrtovanja, organizacije, izvedbe in evalvacije športnih dejavnosti (šola v naravi, športna tekmovanja), testiranja športnovzgojnega kartona in dodatnih programov (Športni program Zlati sonček).	220	3.18	0.857
K 2: Poznavanje gibalnih in telesnih značilnosti otrok.	220	3.18	0.622
K 20: Poznavanje dejavnikov kakovosti in zagotavljanje kakovosti poučevanja pri predmetu šport.	220	3.18	0.705
K 25: Sposobnost diferenciacije in individualizacije v učnem procesu.	220	3.09	0.817
K 11: Sposobnost izbire in uporabe različnih učnih strategij in metodičnih postopkov pri poučevanju predmeta šport.	220	3.07	0.830
K 12: Sposobnost uporabe informacijsko-komunikacijske tehnologije pri poučevanju predmeta šport.	220	3.05	0.848
K 1: Poznavanje razvoja otrok (gibalni in telesni razvoj).	220	3.04	0.776
K 7: Sposobnost prikaza športnih prvin.	220	2.85	0.824
K 23: Sposobnost preprečevanja telesnih poškodb in nudenje prve pomoči pri poškodbah.	220	2.75	0.846
K24: Sposobnost vključevanja in dela z otroki s posebnimi potrebami v predmet šport.	220	2.48	0.773

* Kompetence so v nadaljevanju v tabelah označene z zaporedno številko kompetence

Vrednosti aritmetičnih sredin kažejo, da učitelji visoko ocenjujejo večino kompetenc, kar je skladno z nekaterimi dosedanjimi ugotovitvami (Šlajkovec, 2016). Za prvi dve najvišje ocenjeni kompetenci je značilno, da sta širše opredeljeni, saj gre za osnovo

učiteljevega dela pri vseh predmetih. Visoka ocena kompetence za načrtovanje in pripravo pouka športa je delno v nasprotju z ugotovitvami Juraka, Kovačeve in Strela (2004), ki opozarjajo na določene pomanjkljivosti na področju načrtovanja in organizacije pouka športa pri razrednih učiteljih. Podobno ugotavljajo tudi Hardman in sodelavci (2014), ki opozarjajo, da se ena od večjih pomanjkljivosti učiteljev nanaša ravno na področje priprave na pouk športa. Dodati je treba, da razredni učitelji kompetence za načrtovanje in pripravo ter posredovanje informacij učencem in staršem uporabljajo pri svojem delu, ki je povezano tudi z ostalimi predmeti, zato visoka ocena teh kompetenc v naši raziskavi ni presenetljiva. Po vrednosti aritmetičnih sredin sledijo kompetence, ki so bolj športno opredeljene, vendar temeljijo predvsem na teoretičnem poznavanju vsebin športa, ki jih učitelji uporabljajo pri poučevanju športa. Po drugi strani pa so učitelji najnižje ocenili kompetence, ki se nanašajo na sposobnost vključevanja in dela z otroki s posebnimi potrebami v predmet šport (AS = 2,48), sposobnost preprečevanja telesnih poškodb in nudenje prve pomoči pri poškodbah (AS = 2,75), sposobnost prikaza športnih prvin (AS = 2,85), sposobnost uporabe informacijsko-komunikacijske tehnologije pri poučevanju predmeta šport (AS = 3,04) ter sposobnost izbire in uporabe različnih učnih strategij in metodičnih postopkov pri poučevanju predmeta šport (AS = 3,07). Učitelji najnižje ocenjujejo kompetence, ki so povezane s praktičnimi športnimi znanji, ki jih uporabljajo pri poučevanju, in to mnogo nižje kot kompetence, ki so povezane z bolj teoretičnimi športnimi znanji. Še posebej z najnižjo oceno izstopa sposobnost dela z učenci s posebnimi potrebami. Tudi v drugih raziskavah ugotavljajo, da je pri poučevanju športa najzahtevnejša ravno obravnava otrok s posebnimi potrebami (Štemberger, 2003; Skribe Dimec, 2006; Stopar, 2007; Šlajkovec, 2016). To je popolnoma razumljivo, saj gre za področje, ki zahteva izjemno veliko znanja in izkušenj, kar pa učiteljem na tem področju zagotovo manjka. Za kakovostno strokovno delo na področju otrok s posebnimi potrebami je potrebna specifična izobrazba. Takšno stanje je prisotno že dalj časa, zato so lahko te ugotovitve spodbuda, da se učiteljem, ki poučujejo šport, ponudijo še dodatna usposabljanja, ki bi jim omogočila bolj kompetentno delo z otroki s posebnimi potrebami. Med najnižje ocenjenimi kompetencami je tudi preprečevanje poškodb in nudenje prve pomoči. Tudi v tem primeru gre za specifična znanja, ki bi jih lahko učiteljem ponudili v programih dodatnega usposabljanja. Nizko je ocenjena tudi kompetenca, ki se nanaša na prikaz športnih elementov. Že v dosedanjih raziskavah se je izkazalo, da se učitelji počutijo manj kompetentne za prikaz – še

posebej zahtevnejših elementov (Štemberger, 2003; Semič, 2014; Šlajkovec, 2014; Vodovnik, 2014; Obeda, 2018). Razlogov za takšno stanje je zagotovo več, na tem mestu bi predvsem izpostavili dejstvo, da anketirani učitelji niso specializirani samo za poučevanje športa, temveč poučujejo tudi druge predmete.

V tabeli 2 so prikazani rezultati primerjave aritmetičnih sredin kompetenc glede na delovno dobo učiteljev.

Tabela 2: Rezultati ANOVE za posamezne kompetence glede na delovno dobo učiteljev.

Kompetenca	Delovna doba učiteljev	N	Srednja vrednost	Standardni odklon	ANOVA f	P
K 9	do 10 let	69	2.79	.587		
	11–20 let	66	3.84	.451	43.379	.000
	več kot 20 let	85	3.60	.859		
K 19	do 10 let	69	2.71	.575		
	11–20 let	66	3.39	.610	49.554	.000
	več kot 20 let	85	3.73	.716		
K 5	do 10 let	69	2.79	.534		
	11–20 let	66	3.00	.512	112.825	.000
	več kot 20 let	85	3.91	.466		
K 8	do 10 let	69	2.82	.517		
	11–20 let	66	3.29	.776	27.007	.000
	več kot 20 let	85	3.67	.793		
K 16	do 10 let	69	2.71	.670		
	11–20 let	66	3.32	.594	43.858	.000
	več kot 20 let	85	3.73	.747		
K 12	do 10 let	69	2.47	.657		
	11–20 let	66	2.84	.371	58.294	.000
	več kot 20 let	85	3.62	.856		
K 1	do 10 let	69	2.44	.608		
	11–20 let	66	2.94	.439	64.238	.000
	več kot 20 let	85	3.56	.721		
K 7	do 10 let	69	2.00	.489		
	11–20 let	66	2.90	.469	130.094	.000
	več kot 20 let	85	3.44	.655		
K 23	do 10 let	69	1.88	.325		
	11–20 let	66	2.77	.422	143.463	.000
	več kot 20 let	85	3.40	.747		
K 24	do 10 let	69	1.79	.407		
	11–20 let	66	2.10	.298	307.635	.000
	več kot 20 let	85	3.27	.445		

Za primerjavo smo izbrali pet najvišje ocenjenih in pet najnižje ocenjenih kompetenc.

V vseh kompetencah rezultati kažejo, da obstaja statistično pomembna razlika (p = 0,00) glede na delovno dobo. Rezultati Scheffejevega post-hoc testa kažejo (p < 0,05), da učitelji z več kot 20 leti delovne dobe značilno višje vrednotijo vse kompetence kot učitelji z 10–20 leti delovne dobe in učitelji z manj kot 10 leti delovne dobe. Izjema je le vrednotenje sposobnosti načrtovanja, organizacije, izvedbe in evalvacije pouka športa (K 9), saj rezultati Scheffejevega post-hoc testa kažejo (p = 0,108), da med učitelji z več kot 20 leti delovne dobe in učitelji z 11–20 leti delovne dobe ni razlik v vrednotenju omenjene kompetence. Najvišje so kompetence ocenjevali učitelji z delovno dobo več kot 20 let, najnižje pa učitelji z delovno dobo do 10 let. Kot kaže, je kompetentnost za poučevanje pouka športa v veliki meri povezana z delovno dobo. To je skladno s pričakovanji, saj znanja in izkušnje, ki jih učitelji z leti pridobijo, omogočajo bolj kompetentno poučevanje. Poleg tega se v letih poučevanja učitelji vključujejo v različna strokovna usposabljanja, tudi na področju športa, kar jim zagotovo omogoči večjo kompetentnost za poučevanje. Treba pa je dodati, da se po navedbah drugih raziskav, izobraževanj in usposabljanj s področja športa učitelji ne udeležujejo ravno pogosto (Štemberger, 2003; Šlajkovec, 2016; Vodovnik, 2014).

V tabeli 3 so prikazani rezultati ANOVE za najvišje in najnižje ovrednotene kompetence, glede na čas, ki ga učitelji dnevno namenijo športni dejavnosti. V vseh kompetencah obstaja statistično pomembna razlika (p = 0,00). Rezultati Scheffejevega post-hoc testa kažejo (p < 0,05), da *zelo športno dejavni* učitelji značilno višje vrednotijo vse kompetence kot *srednje športno dejavni* učitelji in *manj športno dejavni*. Izjema je le vrednotenje sposobnosti načrtovanja, organizacije, izvedbe in evalvacije pouka športa (K 9), saj rezultati Scheffejevega post-hoc testa kažejo (p = 0,183), da med zelo športno dejavnimi in srednje športno dejavnimi učitelji ni razlik v vrednotenju omenjene kompetence. Rezultati kažejo, da praviloma najvišje vrednotijo svoje kompetence za poučevanje športa učitelji, ki so *zelo športno dejavni*, to pomeni več kot 45 minut dnevno, nasprotno pa najnižje vrednotijo kompetence tisti učitelji, ki so *manj športno dejavni,* tj. manj kot 30 minut dnevno.

Tabela 3: Rezultati ANOVE za posamezne kompetence glede na čas trajanja športne dejavnosti učiteljev na dan.

Kompetenca	Športne dejavnosti učiteljev na dan:	N	Srednja vrednost	Standardni odklon	ANOVA	
					f	P
K 9	manj kot 30 minut	68	2.95	.677		
	30–45 minut	72	3.78	.915	34.362	.000
	več kot 45 minut	80	3.86	.490		
K 19	manj kot 30 minut	68	2.73	.620		
	30–45 minut	72	3.40	.646	51.899	.000
	več kot 45 minut	80	3.77	.663		
K 5	manj kot 30 minut	68	2.57	.621		
	30–45 minut	72	3.03	.450	61.003	.000
	več kot 45 minut	80	3.71	.776		
K 8	manj kot 30 minut	68	2.75	.648		
	30–45 minut	72	3.60	.600	50.279	.000
	več kot 45 minut	80	3.74	.767		
K 16	manj kot 30 minut	68	2.73	.541		
	30–45 minut	72	3.26	.695	54.821	.000
	več kot 45 minut	80	3.81	.649		
K 12	manj kot 30 minut	68	2.86	.507		
	30–45 minut	72	3.57	.772	27.548	.000
	več kot 45 minut	80	3.61	.875		
K 1	manj kot 30 minut	68	2.59	.655		
	30–45 minut	72	3.09	.812	37.660	.000
	več kot 45 minut	80	3.65	.749		
K 7	manj kot 30 minut	68	2.14	.591		
	30–45 minut	72	3.06	.234	140.385	.000
	več kot 45 minut	80	3.61	.710		
K 23	manj kot 30 minut	68	2.07	.542		
	30–45 minut	72	2.89	.320	128.452	.000
	več kot 45 minut	80	3.58	.801		
K 24	manj kot 30 minut	68	1.89	.490		
	30–45 minut	72	2.46	.502	162.451	.000
	več kot 45 minut	80	3.35	.482		

Zanimivo je, da so največje razlike v aritmetičnih sredinah glede na športno dejavnost pri najnižje ocenjenih kompetencah. Bolj kot so učitelji športno dejavni, višje ocenjujejo te kompetence in obratno. Razlike v aritmetičnih sredinah med ovrednotenimi kompetencami so tudi več kot 1,5 ocene. Kot smo že omenili, te kompetence temeljijo na praktičnih športnih znanjih in izkušnjah ter so bolj razvite pri učiteljih, ki so tudi sami bolj športno dejavni. Nasprotno pa so med skupinami učiteljev glede na športno dejavnost bistveno manjše razlike pri najvišje ocenjenih

kompetencah, pri čemer vrednost razlike aritmetičnih sredin znaša 1 oceno ali celo manj.

Sklep

Ugotavljamo, da so dobljeni rezultati skladni s predvidevanji in z nekaterimi dosedanjimi raziskavami, čeprav je raziskav na tem področju dokaj malo. Potrdilo se je, da razredni učitelji visoko ocenjujejo svoje kompetence za poučevanje športa. Najvišje ocenjujejo kompetence za poučevanje, ki so vezane predvsem na teoretična športna znanja. Nižje pa vrednotijo kompetence, ki so povezane s praktičnimi športnimi znanji, ki jih je treba uporabiti pri pouku. Nadalje ugotavljamo, da so najvišje vrednotili kompetence učitelji, ki so v skupini z najdaljšo delovno dobo, in nasprotno, najnižje so vrednotili kompetence učitelji iz skupine z najkrajšo delovno dobo. To dokazuje, da znanja in izkušnje, ki jih učitelji z leti pridobijo, pomenijo tudi višjo kompetentnost za poučevanje športa. Še posebej pa je treba izpostaviti, da obstaja nekaj kompetenc, ki jih učitelji vrednotijo nizko. Med slednjimi izstopa predvsem tista, ki se nanaša na poučevanje otrok s posebnimi potrebami pri športu, kar je za učitelje izjemno zahtevno delo. Na tem področju obstaja vsekakor dobra priložnosti za izboljšanje stanja, predvsem bi bilo smiselno ponuditi učiteljem ustrezna strokovna usposabljanja. Dejstvo, da so najvišje vrednotili kompetence tisti učitelji, ki so tudi sami največ športno aktivni, kaže na potrebo, da bi bilo smiselno učitelje, ki so manj aktivni, spodbujati k večji športni aktivnosti, še posebej, ker je motiviranost za športne aktivnosti učiteljev nizka (Hardman idr., 2014). Praktična športna dejavnost učiteljev je pomembna kot sestavina zdravega življenjskega sloga ter za zagotavljanje dobre telesne pripravljenosti, poleg tega pa tudi za pridobivanja športnih izkušenj, ki so pomembne za poučevanje športa. In nenazadnje, športno aktivni učitelji lahko s svojim zgledom pomembno vplivajo na učence.

V prihodnje bi bilo kompetence za poučevanje športa smiselno raziskati na še večjem vzorcu učiteljev ter izvesti primerjavo predmetno specifičnih kompetenc različnih predmetnih področij. Predvsem pa se zdi smiselno omenjene ugotovitve v še večji meri upoštevati pri pripravi programov strokovnih usposabljan in pri vsebinah izobraževalnih programov.

Summary

The main aim of the study was to find out how elementary teachers evaluate their competence for teaching Physical Education (PE) regarding seniority and physical activity involvement. The study was conducted on a non-randomized sample of 220 elementary teachers teaching PE. Data were collected by a standardized questionnaire. Arithmetic means and standard deviations of self-competence evaluation for PE teaching were calculated. Only the five highest-rated and the five lowest-rated competences were included in further analysis. According to seniority, participants were divided into three categories: up to 10 years, between 11 and 20 years, and more than 20 years. According to the duration of teachers' physical activity per day, participants were also divided into three categories: less active (<than 30 minutes), moderately active (30 - 45 minutes), and very active (> as 45 minutes). One-way analysis of variance (ANOVA) was used to determine differences in the evaluation of competences according to teacher seniority and level of physical activity. The results show that the highest assessed competencies include the ability to plan, organize, implement and evaluate PE lessons (AM = 3.42), the ability to design and communicate information to students and parents (AM = 3.32), and knowledge and understanding of basic concepts in the field of sport (AM = 3.31). In addition, competences requiring knowledge of the official curriculum for PE and its application in practice (AS = 3.30) and the ability to check and assess proficiency in PE (AS = 3.30) were also evaluated highly. The AM values show that teachers rate most of the competences highly, which is in line with some previous findings (Šlajkovec, 2016). On the other hand, teachers gave the lowest rating to competences related to integrating and working with children with special needs in PE lessons (AS = 2.48), preventing injuries, and providing first aid for injuries (AS = 2.75), and the ability to demonstrate sports elements (AS = 2.85). Also given a low rating were the competencies involving the ability to use information and communication technology in PE teaching (AS = 3.04) and choosing and using different learning strategies and methodological procedures in PE teaching (AS = 3.07). The results show a statistically significant difference (p = 0.00) in all competences according to seniority. Teachers with a seniority of more than 20 years assessed their competences the highest, while teachers with up to 10 years in the job assessed their competences as the lowest. As it turns out, competence in teaching PE is mostly related to seniority. The results show that, as a rule, the most physically active teachers value

their competences for PE teaching very highly. In contrast, the least physically active teachers evaluate their competences as low. We find that these results are in line with the predictions and with some previous research, although there is relatively little research in this area. We confirmed that elementary teachers highly value their competences for PE teaching. Teachers give the highest rating to those teaching competences that are mainly related to theoretical sports knowledge. However, they assign low competence scores to those associated with practical physical skills. Furthermore, we established that teachers' knowledge and experience over the years also results in greater competence in PE teaching. This indicates the need to encourage teachers to become involved in regular physical activity.

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Why Student Teachers Major in English Education: An Analysis of Motives for Becoming Future Teachers

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Abstract/Izvleček

This study explores the major factors that motivated 1139 student teachers at six teacher training institutions from the intake years 2015 to 2018 to enrol in English education programs. The result of quantitative descriptive analysis showed that in extrinsic motives, out of twenty-three motive statements, the mean scores of ten motive statements were included in the medium interpretation, followed by intrinsic motives with the mean scores of only three statements included in the medium interpretation out of thirteen motive statements, and in altruistic motives, of seventeen motive statements, the mean scores were included in the low interpretation.

Zakaj se študenti pedagoških smeri odločajo za študij angleščine: analiza motivov za odločitev postati učitelj Ta raziskava je proučevala glavne motive 1139 študentov šestih institucij na področju izobraževanja učiteljev vpisanih v letih 2015 do 2018 za vpis v študijske programe angleščine. Rezultati kvantitativne deskriptivne analize so pokazali, da je pri zunanjih motivih deset od triindvajsetih izjav motiva uvrščenih v srednjo interpretacijo. Temu so sledili notranji motivi, kjer so bili izmed trinajstih izjav motiva v srednjo interpretacijo uvrščeni le trije srednji rezultati in altruistični motivi s sedemnajstimi izjavami motiva, od katerih so bili vsi srednji rezultati uvrščeni v nižjo interpretacijo.

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Introduction

The quality and performance of teachers will influence the success of educational changes. Without motivation, enthusiasm, and commitment to the learner's education, as well as to the teaching profession, it is impossible to offer high quality education (Heinz, 2015). That is why it is necessary to recruit highly motivated entrants to become future teachers. Teacher training institutions such as the Faculty of Teacher Training and Educational Sciences are responsible for recruiting high school graduates to be skilful and motivated future teachers. Since the release of the program of teacher certification in 2007, the profession of teacher has become promising. Year by year, the number of high school graduates who continue their studies at teacher training institutions has increased significantly. There are more than 450 teacher training institutions, with more than 1.5 million students. From these numbers, teacher training institutions can produce 300,000 teacher candidates every year, while our country requires only 40,000 teachers per year. This means that we are threatened not only by oversupply but also by the uncontrolled quality of institutions, the teaching and learning process, as well as the quality of the subsequent output (future teachers). However, this condition exerts an impact on teacher training institutions. They compete to recruit many students without considering the quality of the institution itself, such as institutional standards, the student recruitment system, curriculum, lecturers, facilities and infrastructure, and financial aspects. Until now, all these aspects seem to have been un-standardized. The student recruitment system is one important aspect that determines the quality of prospective teachers. Unfortunately, there is no standard policy yet for recruiting students to enrol at LPTK *(Ditjen Sumber Daya Ristek Dikti*, 2017). They only have to pass a one-time written test for all majors, including the English education major. This condition may not be able to identify students who genuinely want to be teachers, especially English teachers, in the future. However, it is essential to know their motives for enrolling in the English education major and becoming English teachers. Over the years, studies related to the motivation to learn English as foreign language and to become a teacher of a foreign language, in this case an English teacher, have been conducted (Flores & Niklasson, 2014; Kyriacou & Kobori, 1998). Unfortunately, such studies are not often conducted in Indonesia, since there are limited studies regarding this issue, except for Mukminin, Kamil, Muazza, and Haryanto (2017) and Mukminin, Rohayati, Putra, Habibi, and Aina (2017).

Based on this fact, we were driven to conduct a study on the motives of prospective student teachers to enrol at Teacher Training Institutions majoring in English Education and to become English teachers for their future career. Previous studies (e.g., Brown, 1992; Chuene, Lubben, & Newson, 1999; Kyriacou & Kobori, 1998; Mukminin et al., 2017; Mukminin et al., 2017) have established three main categories of motives: altruistic, intrinsic and extrinsic. First, *altruistic motives* deal with seeing teaching as a socially worthwhile and important job, a desire to help children succeed, and a desire to help society improve. Second, *intrinsic motives* cover aspects of the job activity itself, such as the activity of teaching children and an interest in using their subject matter knowledge and expertise. Third, *extrinsic motives* cover the aspects of the job that are not inherent in the work itself, such as long holidays, level of pay, and status. Other studies have identified the altruistic, intrinsic, and extrinsic motives that attracted senior high school graduates to enrol at teacher training institutions (e.g., Fokkens-Bruinsma & Canrinus, 2012; Johnston, McKeown, & McEwen, 1999; Kılınç, Watt, & Richardson, 2012; King, 1993; Kyriacou & Coulthard, 2000; Kyriacou, Hultgren, & Stephens, 1999; Kyriacou, Kunc, Stephens, & Hultgren, 2003; Lai, Chan, Ko, & So, 2005; Lin, Shi, Wang, Zhang, & Hui, 2012; Low, Lim, Ch'ng, & Goh, 2011; Manuel & Hughes, 2006; Mukminin et al., 2017; Pop & Turner, 2009; Richardson & Watt, 2006; Schutz, Crowder, & White, 2001; Yong, 1995). These studies commonly found three major motives (altruistic, intrinsic, and extrinsic) among newly graduated senior high school students for choosing a teacher training institution. Nevertheless, those studies provide information only about the student teachers' motives for enrolling at teacher training institutions in all majors. Only a few (e.g., Mukminin et al., 2017) have focused on the views of student teachers, especially those who take an English education major and the correlation between students' socio-demographic characteristics with their choice of the English education major and the impact on the recruitment system. The recruitment system for accepting recruits into teacher training institutions in Indonesia operates through a one-time written test, nationally administered. This cannot provide enough information on a candidate's capability in teaching, or the motives that drive them to enrol at teacher training institutions, especially for a major in English education. Thus, this study examined student teachers' motivation levels in taking the English Education Major at teacher training institutions. Moreover, this study sought to discover the difference in the level of motives among altruistic, intrinsic, and extrinsic motives for the student teachers to elect an English education

major to become an English teacher with their socio-demographic characteristics (academic year, university, gender, and parents' occupation). To address the issues, the following research questions guided this study: 1. What are student teachers' motive levels for choosing an English Education Major in Teacher Training Institutions? 2. What are the differences in the student teachers' motivation levels, based on the demographic background?

Methods

Design of the study
This study used a cross-sectional survey design. For the purpose of the study, we obtained permission from three public and two private universities in Jambi and one Islamic public university in South Sumatra, Indonesia (see Table 1). All English student teachers at the research sites were invited to join the study by participating in completing the questionnaire. The target populations of this study were all student teachers taking an English education major in six teacher training institutions from the intake years 2014, 2015, 2016, 2017, and 2018. Unfortunately, we failed to obtain data from the respondents in the intake year 2014. The total number of student teachers was 1712 persons, and 89 respondents participated in the pilot study.

Data collection procedure
The instrument used in this study was a closed-ended questionnaire, adapted from Sinclair (2008) and Eccles (2005, as cited in Killinc et al., 2012) and comprising two parts. The first part requests the participant's socio-demographic background information, consisting of batch year indicated by semester, university, gender, and parents' occupations, divided into father's and mother's occupation. Then, the second part of the questionnaire focuses on the three motives (extrinsic, altruistic, and intrinsic), consisting of 53 items. We used a 5-level Likert scale: *strongly agree* (SA)*, agree* (A)*, disagree* (D)*, and strongly disagree* (SD). To establish its validity and reliability, the questionnaire had been piloted on 89 student teachers from Universitas Jambi before we distributed it to the real respondents. In the process of collecting data from six (6) teacher training institutions, we personally asked permission from the Deans by explaining the purpose for obtaining the data. After they confirmed, we

began to distribute the questionnaire. It took 15 to 20 minutes to complete the questionnaire. However, not all respondents returned the questionnaire, and several questionnaires were regarded as not accepted because the respondents did not fill out the questionnaire completely. The response rates for the questionnaires are summarized in Table 1 below:

Table 1: Frequency and percentage of student teachers' response rates

Teacher Training Institutions	Questionnaires Distributed	Questionnaires Returned
Universitas Jambi	319	239 (74.9%)
Universitas Batanghari	169	101 (59.7%)
UIN Sultan Thaha Syaifuddin	525	282 (53.7%)
UIN Raden Fatah	362	336 (92.81%)
STKIP Bangko	119	84 (89.36%)
IAIN Kerinci	124	97 (78.2%)
Total	1712	1139 (72.6%)

Data analysis

The quantitative data analysis was processed using the Statistical Package for the Social Sciences (SPSS) Version 23.0 for Windows. The data analysis involved a 5-step Likert-scale, from strongly agree, to agree, neither agree nor disagree, not agree, and strongly disagree. Table 2 shows the score rating of the Likert-scale. For reliability, based on the result of the analysis of Cronbach alpha, it was found that the value of α was 0.850. So, it can be concluded that this questionnaire was reliable. In this research, for validity, we used a "think – aloud interview" (Neuman, 2014) with the respondents who were not part of this study. Of 89 respondents, 30 agreed to participate. Through this technique, respondents were asked to articulate their thoughts about the questionnaire, while the researcher took notes about their thoughts (Johnson & Christensen, 2008). Researchers can thus measure if non-sample respondents obtain the same understanding of the questionnaire as the researcher. One result of using the technique was that respondents suggested that the researcher provide an Indonesian version of the questionnaire.

Table 2: Tripartite motives score rating

Questionnaire items (5-point Likert-Scale)	
5	Strongly agree
4	Agree
3	Neither agree nor disagree
2	Not agree
1	Strongly disagree

Descriptive statistical analysis was used in data analysis of this research to describe the profile of respondents and their responses to research questions. The frequency measures including percentages, means, and standard deviation were used in this step. The mean score of the respondents' motives was calculated, and this mean score indicated the respondents' overall self-report on their own level of motives. The interpretation of the mean score, QCA (2000 cited in Hadiyanto, 2011) offers the most relevant interpretation of the data. Table 3 below shows the interpretation of the mean score's level.

Table 3: Interpretation of mean scores

Mean Score	Interpretation
1.00 to 2.33	Low
2.34 to 3.66	Medium
3.67 to 5.00	High

Qualification and Curriculum Authority (QCA). 2000. Key Skills Units (Level 1-5), London cited by Hadiyanto (2011)

Results

Demographic background of respondents
This study involved 1139 student teachers majoring in English education from six teacher training institutions, consisting of 239 student teachers from *Universitas Jambi*, 101 student teachers from *Universitas Batanghari*, 282 student teachers from *UIN Sultan Thaha Syaifuddin Jambi*, 336 student teachers from *UIN Raden Fatah* Palembang, 97 student teachers from IAIN Kerinci, and 84 student teachers from STKIP Bangko. By looking at the gender category, from the six teacher training institutions, most respondents were female. From *Universitas Jambi,* 77.8% were female and 22.2% male, while from *Universitas Batanghari*, female respondents comprised 83.2% and only 16.8% were male. From UIN Sultan *Thaha Syaifuddin Jambi*, out of 282 respondents, only 59 (20.92%) were male and the rest female--223 (79.08%).

From *UIN Raden Fatah Palembang*, out of 336 respondents, only 14.3% were male and 85.7% females. From *IAIN Kerinci*, 73.2% of respondents were female and 26.8% male. While from *STKIP Bangko*, 80.9% respondents were female and only 19.1% male. Parents' occupations were divided into two categories, father's occupations and mother's occupations. Out of 1139 respondents, the highest numbers of fathers were farmers (43.10%); 27.56% were businessmen, 24.67% civil servants, and the rest were 'unemployed' (4.65%) (No job or deceased). For mother's occupations, more than half the respondents' mothers were unemployed or housewives (68.12%). Then followed mothers who were farmers, 12.64%, civil servants 12.29%, and the rest were businesswomen (6.93%).

Levels of Student teachers' motives for taking an English education major

The data gathered from the distributed questionnaires covered 1139 respondents. The rankings of each statement from each motive (extrinsic, altruistic, and intrinsic) were arranged according to the mean scores. The descriptions of each dominant motive are displayed and discussed below.

Extrinsic motives of student teachers taking the English education major. Table 4 shows the major initial extrinsic attractions for student teachers to choose an English education major, based on the mean score rank. Out of 23 statements, ten fell into the medium level. The three highest mean scores (3.43) were obtained by the statement *"I could not enrol in the department that I desired most"*; *"I chose to be an English teacher as a last resort"*; *"I am not sure about the profession I wanted to have"* received mean scores of 3.36 and 3.00, respectively. These were included in the "No Other Choice" sub-category. Other statements included in the sub-category "Time for Family/Working Hours" came right after the previous sub-category. The statement *"The time schedule will be compatible with my home situation"* received a mean core of 3.24, followed by "*A teacher will have longer holidays and vacation"* with a mean score of 2.90, and "I *will be able to work near home"* (2.65).

In the sub-category "job transferability," the mean score was 2.89 for the statement "*A teaching job will allow me to choose where I wish to live",* while for the sub-category "social influence/influence of others", the mean score was 2.47 for *"I am inspired by my parents"* and 2.38 for *"My friends think that I should be an English teacher."* In the

sub-category "job security," the mean score for "*Teaching will enable me to have a reliable salary*" was 2.43. None of the statements was included in the sub-category "nature of work" at the medium level. The rest of the statements were at low level.

Table 4: Student teachers' extrinsic motives rank based on the level of mean score

STATEMENTS	MEAN	S.D	LEVEL
As a teacher, I can have much more time for family	2.20	,815	Low
Asa teacher, I will have longer holidays and vacation	2.90	,937	Medium
As a teacher; I will have fewer working hours per day	2.25	,859	Low
As a teacher, I will have flexible time for family	2.28	,804	Low
The time schedule will be compatible with my home situation	3.24	.953	Medium
I will be able to work near home	2.65	.878	Medium
Teaching will provide me with a steady career path	2.13	.788	Low
Teaching will enable me to have a reliable salary	2.43	.781	Medium
Teaching will ensure a sustainable profession	2.21	.711	Low
As an English teacher, I could have an opportunity to work internationally.	1.79	.749	Low
A teaching certification could enable me to work in other countries/ or another country	2.00	.793	Low
A teaching job will allow me to choose where I wish to live	2.89	.814	Medium
My friends think that I should be an English teacher	2.38	.890	Medium
My family encourage me to be an English teacher	2.07	.940	Low
I am inspired by my parents	2.47	1.197	Medium
I am inspired by my former English teacher	2.13	1.058	Low
I could not enrol in the department that I desired most	3.43	1.379	Medium
I chose to be an English teacher as a last resort	3.36	1.325	Medium
I am not sure about the profession I wanted to have	3.00	1.135	Medium
Teaching is a creative profession	1.73	.693	Low
Teaching gives me an opportunity to interact with interesting colleagues/students.	1.53	.624	Low
Teaching gives me an opportunity to meet a lot of people	1.57	.664	Low
Teaching is varied work, so it will not lead to boredom	2.09	.761	Low

Altruistic motives of student teachers in choosing the English education major: In the category of altruistic motives, none of the statements ranked in the medium or high level. All of them scored in the low level. Of the five highest mean scores, the statement

"Teaching will enable me to fight against social disadvantage." received the highest mean score (2.18). This statement is part of the sub-category "enhancing social equity." The statement that gained the second highest mean score (1.98) was *"Teaching English will enable me to serve the society."* This statement is included in the 'contribution to society' sub-category. The 'love of children' sub-category, consisting of two statements, obtained the next highest mean scores. They are "*I would like to work in an environment where there are children and young people.*" and "*I like working with children and young people.*" Both statements achieved the same mean score, which was 1.95. The statement, *"Teaching will enable me to influence the next generation."* received the mean score of 1.93 in the sub-category 'molding the young generation.' Table 5 shows the specific results for the altruistic motive statements of the student teachers, based on the level of mean scores.

Table 5: Student teachers' altruistic motives ranked by mean score

Statements	M	S.D	LEVEL
I want a profession that involves working with children or young people.	1.90	.750	Low
I would like to work in an environment where there are children and young people.	1.95	.716	Low
I like working with children and young people.	1.95	.706	Low
Teaching English will enable me to serve the society.	1.98	.737	Low
By teaching English, I will make valued contributions to society.	1.89	.685	Low
Teaching gives me a chance to make a positive impact on society.	1.82	.673	Low
Helping society better in the future.	1.71	.666	Low
Teaching will enable me to shape children and young people	1.89	.705	Low
Teaching will enable me to influence the next generation.	1.93	.715	Low
Teaching will make me have an effect on children and young people	1.77	.623	Low
Teaching English will enable me to increase the will to succeed in students who do not have opportunities	1.76	.685	Low
Teaching will enable me to fight against social disadvantage.	2.18	.784	Low
Teaching will offer me the opportunity to help children or young people in need of social assistance	1.82	.653	Low

Intrinsic motives of student teachers in choosing the English education major: the major reasons that stimulate the student teachers to continue their studies in English Education and to become English teachers intrinsically are descriptively described in Table 6

Table 6: Student teachers' intrinsic motives ranked by mean score

Statements	MEAN	S.D	LEVEL
I am interested in teaching	2.03	.764	Low
I have always wanted to be an English teacher	2.30	.859	Low
Teaching English suits me	2.39	.790	Medium
I feel a personal "calling" to teach	2.32	.850	Low
I love teaching English	2.10	.775	Low
Teaching is an intellectually stimulating occupation	1.99	.653	Low
I have a desire to impart knowledge to other people	1.73	.653	Low
Teaching gives me an opportunity to promote respect for knowledge and learning	1.86	.610	Low
Teaching gives me a lifelong opportunity to learn	1.76	.700	Low
Teaching offers me a good opportunity for career advancement	1.99	.705	Low
Teaching can easily lead to other careers	2.18	.737	Low
Teaching can help me develop character	1.86	.638	Low
Teaching gives me immediate feedback about the effectiveness of my performance (e.g. from students or peers).	2.21	.696	Low
Teaching gives me an opportunity to be an authority	2.44	.755	Medium
I like the thought of being the centre of attention in a room of people	2.91	1.090	Medium
Teaching gives me a chance to be my own boss	2.14	.911	Low
Teaching gives me an opportunity for leadership	1.91	.790	Low

As is clear from Table 6 above, based on the mean scores, there were three statements at the medium level, and the rest were in the low level. The first two highest mean scores were obtained by the statement "*I like the thought of being the centre of attention in a room of people*" and "Teaching *gives me an opportunity to be an authority*" with a mean score of 2.91 and 2.44, respectively. Both statements were in the sub-theme "authority and leadership." Next, the statement, "*Teaching English suits me*" with a mean score of 2.39 was at the third highest mean score, which is part of the sub-category "personal ambition/personal characteristics." None of the two other sub-categories was in the medium level; all of them were in the low levels. These were the sub-categories of "intellectual challenge/stimulation" and "personal/professional development".

Comparison of student teachers' motives with demographic background

The findings on the level of extrinsic, altruistic, and intrinsic motives were obtained from the student teachers' socio-demographic background. The socio-demographic background consisted of the batch (academic year), university, gender, father's occupation, and mother's occupation. *Student teacher's motives based on academic year:* we found the level of each motive based on the mean score. Extrinsic motives were found to be the highest mean score. In the category of batches, the student teachers who enrolled in the academic year 2018 obtained the highest mean score of 2.44, followed by those who enrolled in the academic year 2016 with a mean score of 2.37. In the academic year 2015, the mean score was 2.36 and in the academic year 2017, the mean score was 2.32.

The second reason that student teachers selected the English education major was based on intrinsic motives (low level). The highest mean score for this motive was 2.19 (year 2018), followed by the mean score of 2.13, obtained by student teachers who enrolled in the academic year 2015. In the academic year 2016, the mean score was 2.10. Finally, for the academic year 2017, the mean score was 2.05.

Student teacher's motives based on university of origin: comparison of the mean scores showed the level of student teachers' motives based on their institutions. Of six institutions, only two had mean scores at the low level for all motives: *STKIP Bangko* and *UIN Raden Fatah Palembang,* with the same highest mean score of 2.26 for extrinsic motives. For the other four institutions, extrinsic motives received the highest mean score, which was interpreted at the medium level. STAIN Kerinci achieved the highest mean score of 2.51, followed by *Universitas Jambi* with a mean score of 2.45, then *UIN STS Jambi* with a mean score of 2.44, and ranking last was Universitas Batanghari with a mean score of 2.40. However, all institutions received the same motive rank, in which extrinsic motives obtained the highest mean score, followed by intrinsic motives and lastly, by altruistic motives.

Student teacher's motives ranked by gender**,** Table 7, show that between males and females, there were no differences in the rank level of mean score obtained. Extrinsic motive mean scores ranked first, with a value of 2.35 for females and 2.48 for males. The interpretation level is medium, followed by intrinsic motives, with values of

mean scores between 2.21 and 2.10 for males and females, respectively. The last motive rank was the altruistic motives, with values of mean scores between 1.93 and 1.87 for males and females, respectively. Nevertheless, both intrinsic and altruistic motives were interpreted at the low level.

Table 7: Comparison of mean scores showing student teachers' motives ranked by gender

MOTIVES	FEMALE				MALE			
	N	Mean	S.D	Level	N	Mean	S.D	Level
Extrinsic	921	2,35	0,338	Medium	218	2,48	0,310	Medium
Intrinsic	921	2,10	0,453	Low	218	2,21	0,442	Low
Altruistic	921	1,87	0,446	Low	218	1,93	0,465	Low

N = 1139 respondents

Student teachers' motives ranked by parents' occupations: in the case of parental occupation, the findings showed that extrinsic motives achieved the first rank in the medium level, followed by intrinsic and altruistic motives at the low level. Between intrinsic and altruistic motives, generally, the mean scores for intrinsic motives were higher than the altruistic ones. Fathers' occupations included businessman, civil servant, farmer, and unemployed. The deceased and those with no job were considered as 'unemployed'. For mothers' occupations, we also divided their jobs into four categories, as for paternal occupations. These were businesswoman, civil servant, farmer, and unemployed persons. Mothers who were housewives were included in the "unemployed" category.

The findings show that the highest mean score in fathers' occupation pertain to unemployed persons. Even though the number of students in this group was 53, it ranked in first position. The value of the mean score was 2.45. The second ranks were occupied by civil servants and farmers, with a value of 2.38. Paternal occupation as businessman reached the mean score of 2. 36. Those were interpreted at the medium level in extrinsic motives. The second place was attributed to intrinsic motives. The values of mean scores were 2.25 for unemployed, 2.14 for farmers, 2.10 for civil servants, and 2.08 for businessmen. All of these were interpreted at the low level. The last motive rank was altruistic motives. The occupation as a farmer showed the highest mean score of 1.93, followed by unemployed, with a mean score of 1.91; civil servant and businessman received the same mean score of 1.84. These were also at the low level.

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The category of maternal occupation revealed that, overall, extrinsic motives were the primary motive that triggered student teachers to become English teachers, followed by intrinsic and lastly by altruistic motives. Student teachers whose mothers were housewives (in this study, included in the unemployed) obtained the highest mean score of 2.38, followed by farmers, with the mean score of 2.42. Additionally, businesswomen and civil servants had mean scores of 2.35 and 2.34, respectively. All these highest mean scores were included in the range of the medium level.

However, the other two motives, intrinsic and altruistic, were in the low level of interpretation. Civil servants and farmers had the same mean scores of 2.15, followed by businesswomen $\bar{x} = 2.13$ and unemployed/housewives $\bar{x} = 2.11$. Overall, those mean scores were intrinsic motives, while the other mean scores were included in altruistic motives. To be more specific, farmers $\bar{x} = 1.93$, unemployed/housewives $\bar{x} = 1.89$, businesswomen $\bar{x} = 1.87$, and civil servants $\bar{x} = 1.82$.

Discussion

This study sought to examine student teachers' motives in selecting an English education major at teacher training institutions. Particularly, this study examined student teachers' motive levels for choosing an English education major in teacher training institutions. Furthermore, this study aimed to reveal differences in the levels among altruistic, intrinsic, and extrinsic motives for student teachers to choose an English education major to become English teachers and their socio-demographic characteristics (academic year, university, gender, and parents' occupation). Our findings indicated that in the extrinsic category with three levels of interpretation, the medium level was the highest level of interpretation, which indicated student teachers' motive for becoming English teachers. Out of twenty-three extrinsic motive statements, ten were at the medium level. Based on the mean score of each statement, the sub-category 'no other choice' was the most prominent reason for student teachers selecting an English education major. The second rank was obtained by the sub-category 'time for family/working hours,' followed by 'Job transferability' in the third rank. The fourth and fifth ranks were obtained by the sub-category of 'social influence/influence of others' and 'secure job', respectively.

In the 'no other choice' sub-category, three statements mainly showed student teachers' initial motives for choosing an English education major. First, the failure to take a desired major (mean score = 3.43) became the main reason, followed by becoming an English teacher as a last resort (mean score = 3.36), and the third highest mean score was obtained by the statement that they were still not sure what profession they wanted for their future (mean score = 3.00). For the sub-category 'time for family/working hours', the compatibility of working hours with the home situation, long holidays, and work near home also became priorities leading student teachers to take an English education major. While under the sub-category 'job transferability', only one statement fell in the medium level. It was '*A teaching job will allow me to choose where I wish to live.*'

The sub-category 'social influence/influence of others', with two main priorities consisting of 'inspired by parents' and 'because of friends' suggestion', became the main reason for entering an English education major. The last sub-category in the medium interpretation level was 'secure job', and the salary was the initial reason for choosing this major. The findings support the previous study conducted by Yong (1995), who conducted his study with 1st, 2nd, and 3rd year student teachers enrolled in the education program at the University Brunei Darussalam. His study revealed that extrinsic motives were the main reasons for students becoming teachers. Two reasons that heavily influenced them were 'no other choice' and 'influence of others.' Other previous studies from countries such as China (Su et al., 2001); Turkey (Kilinç et al., 2012), Brunei (Yong, 1995), Zimbabwe (Chivore, 1988), Malaysia (Yaakub, 1990), Jamaica (Bastick, 2000) and Malawi (Mtika & Gates, 2011) revealed that extrinsic motives were regarded as the main priority in choosing teaching as a career. Extrinsic motives referring to salary and career status were a stepping stone to finding another desirable profession and were regarded as important or even as the most influential reasons for becoming a teacher. Additionally, Yaakub (1990) found that the majority of his respondents, 88% of 210, strongly agreed and/or agreed that the teaching profession was a secure job, and 70% of respondents maintained that it would be easy to find employment after teacher training. As the findings showed, the main priority for student teachers in entering an English major and becoming English teachers had no connection at all with the desire to teach. This could become a serious problem for educational standards and could result in poor teacher quality,

leading eventually to poor quality students. This could create a vicious cycle unless teacher training institutions recruit motivated future student teachers.

Based on the data gathered, it was revealed that only three motive statements were interpreted in the medium level, while the rest were in the low level of interpretation, showing the level of willingness behind their decision to continue studying in an English Education Major and to become English teachers. The highest mean score (2.91) was attributed to the statement '*I like the thought of being the centre of attention in a room of people.',* followed by the statement "*Teaching gives me an opportunity to be in authority.",* with a mean score of 2.44; these were two statements from the sub-category "authority and leadership." In contrast to previous studies conducted by Mukminin et al. (2017), (Yong, 1995); and Lai et al. (2005), it was found that the dominant motives of student teachers in becoming English teachers were the opportunities for academic development. The other motive statement in the medium level of interpretation, with a mean score of 2.39, was "*Teaching English suits me."* under the sub-category of personal ambition/personal characteristics (third rank). This finding is in line with the study by Clarke (2009), since he discovered that in Ireland the intrinsic factor "love of subject" achieved the third highest mean value. The remaining motive statements from the two sub-categories 'intellectual challenge/stimulation' and 'personal/professional development' were in the low level of interpretations. These results indicate that it was authority and leadership factors that mostly attracted student teachers to continue their studies in an English education major, more than personal ambition, intellectual challenge, or personal development. These results were in line with the findings by Ngoepe (2014), who stated that intrinsic motives were triggered by interest in or enjoyment of the teaching activity itself and that there was no external pressure on them at all. Additionally, Heinz (2015) stated that in the category of intrinsic motives, aside from enjoyment of teaching, job satisfaction, creativity and interest in the teaching subject were included in this motive. In contrast to the two previously discussed motives (extrinsic and intrinsic), in the category of altruistic motives, all statements were in the low level of interpretation. The findings could mean that altruistic motives did not appear as the main reason influencing student teachers to pursue their studies and become English teachers in the future. However, if we consider the ranking of statements based on the mean score, the highest mean score was 2.18 for the statement "Teaching will enable me to fight against social disadvantage.", (ranked

first), followed by the statement "Teaching English will enable me to serve the society" (mean score = 1.98). These two statements were in the sub-category 'enhancing social equity' and 'contribution to society.' These indicated that even though student teachers belonged to the millennium generation, they still cared about society and wanted to contribute something to society through education, especially by teaching English to make society better. This finding supports earlier studies conducted by Mukminin et al. (2017), who found that more than half (53.85%) of their respondents agreed with the statement, "I have a desire to contribute to society." Moreover, King (1993) in his study, also revealed that the vast majority (86%) of his participants chose the statement, "Teaching contributes to the betterment of society." Another earlier study which is in line with this finding was conducted by Manuel and Hughes (2006). They found that 50.77% of their participants 'strongly agree' with the statement "It has a socially worthwhile job" followed by the statement "I want to enhance social equity" (46.15% in agreement). The statements "I would like to work in an environment where there are children and young people" and "I like working with children and young people" ranked third (mean score = 1.95). These statements were included in the sub-category "love of children." These findings support earlier studies conducted in Indonesia by Mukminin et al. (2017), in Hongkong by Lai et al. (2005), in the Netherlands by Fokkens-Bruinsma & Canrinus, (2012), in Australia by Manuel and Hughes (2006), and in Turkey by Kılınç et al. (2012), who found that working with young people or loving to work with children were common reasons for becoming a teacher. This indicates that a love of children was another motive triggering person to become involved in the world of education, in this case, teaching. This motive did not appear only in Indonesia but also in other countries with different cultures. In terms of the academic year, four batches were included in this research. They were from academic years 2015/2016 to 2018/2019. Based on the calculated descriptive analysis, it was clearly shown that overall, extrinsic motives were the main reasons for student teachers pursuing their studies in the English education major and becoming English teacher,s over intrinsic and altruistic motives. Only one batch, the academic year 2017/2018, was in the low level of interpretation for all motives, while for the other academic years, extrinsic motives were in the medium level of interpretation, while intrinsic and altruistic motives were in the low level. This indicates that in general, extrinsic motives constitute the initial determinants for students to become English teachers over other motives. In terms of the universities or institutions attended by

the student teachers, six institutions were involved in this research: Universitas Jambi, Universitas Batanghari, UIN Sultan Thaha Syaifudin, UIN Raden Fatah, STKIP Bangko, and IAIN Kerinci. Based on the level of interpretations and according to mean scores, two institutions, STKIP Bangko and UIN Raden Fatah Palembang, were in the low level for the three main motives. In terms of gender, there were more females (n = 921) than males (n=218) pursuing an English education major. This shows that females seem more attracted to becoming English teachers than males. However, there was no difference in the level of interpretation based on the mean scores for the three motives. Both males' and females' dominant motives impelling them to become students at teacher training institutions were extrinsic motives. With respect to parental occupation, the questionnaire was categorized into four main occupations, for both the father's and mother's occupations. The occupations were businessman/woman, civil servant, farmer, and unemployed. The unemployed category for fathers included deceased and having no job, while for mothers there was also housewife. Among the three main motives, the same with the other socio-demographics (academic year, gender, and university), extrinsic motives were the initial/primary motives that triggered students to become English teachers or students at teacher training institutions, followed by intrinsic motives, and altruistic motives. Overall, extrinsic motives were the ones most preferred by respondents who planned to become English teachers. These findings differed from those of previous studies, such as Subasi's (2009); Brown's (1992), King's (1993), Kyriacou and Kobori's (1998) and Kyriacou and Coulthard's (2000), who found that intrinsic and altruistic motives, rather than extrinsic motives, mostly influenced students to become English teachers.

Conclusion and Implications

This study sought to examine student teachers' motives in selecting an English education major at teacher training institutions. Particularly, this study examined student teachers' motive levels for taking an English education major in teacher training institutions. Furthermore, this study aimed to research differences in the level of motives among altruistic, intrinsic, and extrinsic motives for the student teachers taking an English education major to become English teachers, with reference to their socio-demographic characteristics (academic year, university, gender, and parental occupation).

Overall, extrinsic motives proved to be the initial determinants and were the ones most preferred over other motives by respondents who planned to take an English education major at teacher training institutions. Another finding of this study revealed that the fifty-three motives were crucial and interrelated. However, the study revealed one surprising issue, since the motive "no other choice', which belonged in the category of extrinsic motives, was the most prominent motive for student teachers to enter an English education program. The findings of this study provide new evidence of and data for policymakers that the one-time written test that has been used for years to recruit senior high graduates from different majors (science, social, and language) to become English teachers cannot guarantee highly motivated candidates for future English teachers. The standard policy of recruiting prospective students to enrol at teacher training institutions should no longer rely on a one-time written test. There should be a model of recruiting highly motivated senior high graduates that screens students' cognitive, affective, and psychomotor areas. Given this study's limitation in being a quantitative study, further research can be undertaken by using a mixed mode method: quantitative, with a questionnaire as the main data gathering source and qualitative in obtaining data by an interview or focus group discussion; or vice-versa. Second, further research can be conducted on a larger scale by including more than one major, not only the English study program, and teacher training institutions included in further study would not only be from the area of Jambi and South Sumatera Province, but the sample of the study could cover other provinces, so that the findings could be generalized and the instrument could be applied to all provinces in Indonesia and even to other countries.

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REPRESENTATION OF MOVEMENT-BASED INTEGRATED LEARNING IN DIFFERENT PHYSICAL ENVIRONMENTS OF AN EARLY EDUCATION INSTITUTION

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Abstract/Izvleček The aim of this paper is to determine the differences in the representation of children's integrated learning in an institutional context between standard children's integrated learning and movement–based integrated learning. The research encompasses two early-aged children's groups attending city kindergartens. The content analysis method was used; activities were photographed and filmed with video cameras. Movement-based integrated learning has a significant influence on the quality of the educational process.

Predstavitev na gibanju temelječega integriranega učenja v različnih fizičnih okoljih predšolskih institucij Namen prispevka je ugotoviti razlike v predstavljanju integriranega učenja otrok v institucionalnem okolju med standardnim integriranim učenjem otrok in na gibanju temelječem integriranem učenju. Raziskava vključuje dve skupini mlajših otrok, ki obiskujejo mestna vrtca. Uporabljena je bila metoda analize vsebine; dejavnosti so bile fotografirane in posnete z videokamerami. Na gibanju temelječe integrirano učenje ima pomemben vpliv na kakovost vzgojnega procesa.

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Introduction

In accordance with the new early and preschool education paradigm (Rinaldi, 2006; Pavlović Breneselović, 2015; Johansson & White, 2011; Maleš, 2011; Miljak, 2015, etc.), and the consequently changed image of children and childhood in the scientific-research discourse (Clark 2013; Corsaro, 2005; Mayall, 2010, etc.), a turn has happened in the study of individual children and their needs towards a recognition of the importance of the structure of interaction among children, adults and the physical environment. For these reasons, the central issue of early education quality, discussed by many authors, including Dahlberg, G., Moss, P., & Pence, A. (2007), is not the level of children's achievements, but the quality of the experience in which children are engaged. Moreover, research in the area of early and preschool education (Dahlberg, g., Moss, P., 2006), regarding such a holistic, wide, social, cultural and ethical view of early education institutions, indicates the necessity of perceiving children holistically, in terms of interaction, complexly and dynamically, as live, pulsing human units, a perspective which is indisputably influenced by taking into account Bronfenbrenner's ecological model of child development (Hayes, O' Toole and Halpenny, 2017). He indicated the intrinsic feature that defines the ecological approach to human development: a focus on dynamic relations between the organism and its environment, where both the person and the environment are found in conjunction and activity, meaning that one should deal with "the process in a context" (Hayes, O' Toole and Halpenny, 2017), i.e. the changes in the micro- and macro-systems surrounding children and people in their close environment. This constitutes a changed viewpoint on the importance of the sociocultural context in development and education, based on the interpretive approach to observing and understanding children's behaviour, for which it is necessary to make long-lasting, careful observation, description and interpretation in various situations and times, and in various specific social and cultural conditions (Edwards et al., 1998; Dahlberg et al., 2007; Bruner, 2000; Giudicci & Rinaldi, 2002; Miljak, 2007). In such a theoretical framework, children's learning is woven into the whole context of everyday life in kindergarten and is a result of their activity (doing) and collaboration with others. The quality of children's learning can be achieved only by considering the wholeness of the conditions in which they live every day; therefore, learning is not divided according to content areas or fields. It is thus inappropriate to give early-aged children's learning a time limit or limited activities (content) planned by the

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preschool teacher. In Reggio pedagogy, teaching is determined as the creation of learning conditions, while learning is defined as the study of the environment where the child lives, and with regard to this, planning of learning is defined in terms of preparation and organisation of the space, materials, situations and learning opportunities (never in terms of the content and information that need to be acquired by the children) (Vujičić, 2010). Integrated learning is based on the creation of possibilities for children to explore their assumptions and satisfy their curiosity by interacting with the physical and social environment, collaborating with peers and adults who can expand their learning. That is why integrated learning is directed toward "perceiving the whole picture" in learning, not to "the acquisition of fragmented knowledge (Mac Naughton, 2003). Integrated learning supposes the interpenetration of playing and learning, while every situation is respected as a learning situation. It always enables playing, observation, experimenting, research and trying out, while including actions, excursions, life-practical activities, numerous ways of expressing ideas and assumptions (movement, sound, drawing, modelling, speech, etc.), as well as multiple learning sources (sensory experience, books, picture books, everyday-use items, artistic products, other people, and information and communication technology).

Early childhood is the period in which movement (physical activity) represents happiness and a challenge to children, and in which they soon acquire new and different motor actions, which they store as motor skills records (Petrić, Kostadin, Peić, 2018). The rapid acquisition of new and various content and forms enables their nervous systems to become susceptible to sole learning (Alić et al., 2016). Integrated programmes of physical exercise in educational institutions have proven to be very successful for increasing in the level of children's physical activity (Domika, Armano, Petrić, 2018). If children move insufficiently, their natural instinct for movement decreases, which in time leads to consequences for their overall motor skills, and is difficult to compensate in adulthood (Pihač, 2011). The acquisition of motor skills gives children the possibility to adapt and develop, as well as to behave actively in the world surrounding them. One of the aims of education is to achieve balanced development of a child by connecting emotions, motor activities and thinking processes, while a lack of experience and of opportunities to participate in motor activity can slow down both the motor and intellectual development of a child (Sindik & Šerbinek Kotur, 2014). When the interaction of brain and body is carefully considered, it becomes clear how important movement

is for learning and the manifestation of life itself: movement awakens and activates many mental abilities, connects and establishes new information and experience in the neural network, and is important for all actions by which knowledge and understanding are represented and expressed (Hannaford, 2007). Physical activity is linked to effects on knowledge, such as improved brain activity and improved brain development (for instance, better neural connections and improved blood circulation and oxygenation), cognitive functioning (for instance, cognitive attention, control and memory), and children's academic success (Mavilidi et al., 2017). To develop the potential for all these benefits to be achieved, the physical experience of learning science through whole body movement should start in early and preschool education, recognised as the place of holistic development (motor, social, emotional, and cognitive) and holistic learning (Mavilidi et al., 2017). Each movement is a sensorimotor occurrence linked to the intimate understanding of the physical world, a world from which each new act of learning is derived (Hannaford, 2007).

If the integrated learning approach based on movement proves successful, the basis for a new teaching theory will be established, one that could make an extremely significant contribution to the child's holistic development. Therefore, the aim of this paper is to determine the differences between children's standard integrated learning and movement-based integrated learning.

Methods

Sample of participants

The research comprised two mixed nursery groups of children from kindergartens in the City of Rijeka. The experimental group had 18 children attending the full-day programme of Kindergarten A. The control group consisted of 16 children from Kindergarten B (Table 1). Both kindergartens have been newly built; they are architecturally modern, with large, spacious indoor and outdoor surfaces. The preschool teacher for the experimental group has a university degree and the status of mentor, with 11 years of work experience in early and preschool education and is continually participating in professional learning and development programmes.

The control group preschool teacher has also completed university education, has eight years of work experience in early and preschool education and participates in professional learning and development programmes. Both preschool teachers are members of learning communities in their working teams. It can be concluded that they have the competences for organising the educational process based on early-aged children's integrated learning.

Table 1: Description of participants.

Groups	Girls	Boys	Total	Ages
Experimental	8	10	18	3.4
Control	8	7	16	3.2

Sample of variables

In the first step, the content analysis method was used to obtain better insight into the comprehension of activities organised on the premises of Kindergarten A and Kindergarten B: the children's living room, hall, gym and outdoor (external) physical environment. Next, in the second step, the same activities were analysed according to the following constituents (adapted from Petrović-Sočo, 2009), which are considered important for understanding the contemporary approach to educational work in an early and preschool education institution:

•   physical environment organisation – in activity centres, the tables and chairs form part of the activity centres, possibility of children's choice, satisfying the need for (self)learning, open spaces, different spaces (re)assigned for children's activities, availability of various stimuli: children organise, adapt and change the space according to their own needs and interests

•   preschool teacher and application of educational strategies – creating the conditions for children's (self)learning, observation, listening and documenting the children's learning process, study of the ways children learn, democratic relationship with children, encouraging cooperative/common learning by doing research, questioning, discovering and experimenting

•   image of the child – understanding children as social beings open to learning; the child is an individual and rich in potential – they create their knowledge alone or in cooperation with others, level of trust in the child

• atmosphere in the educational group – putting children in the position of knowledge creators, the level of children's engagement in activities, (pro)activity, self-initiative and self-organisation, children assuming responsibility; passing from one to another activity – free, flexible and individual; preschool teacher and children's dialogue – their communication, participation of preschool teachers in children's activities.

The measurement protocol and research description

The study forms part of the project "Establishment of the system for monitoring children's physical activity by modern technology in early and preschool institutions" financed by the University of Rijeka, reference number uniri-drustv-18-268. Preschool teachers participated in all phases, especially in the creation and shaping of the integrated curriculum, which encompasses all areas of children's development into one unit and organisation of the educational process in which children freely choose their activities according to interests, needs and opportunities, and explore and learn in a way that is meaningful and purposeful. The children's parents were informed about the project and gave written consent for their children's participation. The study was conducted in June 2019. Each of the educational groups had to be visited four times. We offer our thanks to Kindergarten A and Kindergarten B, as well as to the experimental group preschool teacher and the control group preschool teacher who readily and openly agreed to participate in this research. The control group preschool teacher conducts the integrated approach in planning the educational work with early-aged children, where the children's learning represents an integrated process that is not to be divided by content or area, but starts from authentic children's activities where both individually and in cooperation with other children, they explore, learn by doing and actively build their knowledge in line with the National Curriculum for Early Childhood and Preschool Education of the Republic of Croatia (2015). The experimental group continually conducts the integrated approach in planning the educational work in line with the fundamental principles of the official national document issued in 2015 but emphasizing movement. Motor activity is highly represented in all thr children's activities (art, research, music, mime, drama and scene playing, desk-manipulative, pre-reading and pre-mathematics etc.). Stimuli that include movement are ensured in each activity centre because these motivate children to perform motor tasks that enable them to play, learn and explore throug movement.

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The preschool teacher prepares stimuli which enable movement, while simultaneously encouraging the construction and co-construction of knowledge and the development of skills.

Data processing

The observation and content analysis methods were used. The activities of integrated learning and movement-based integrated learning were photographed and filmed with a video camera. To make the research as objective as possible, a "critical friend" took part in the analysis and discussion of the video footage. The activities conducted in the living room, gym, hall and outdoor space of the kindergartens were separately observed during the direct educational work and by a subsequent check-up of the footage and photographs, which functioned as pedagogic documentation and data collection. Documentation made it possible for the preschool teachers to gain deeper insight into and understanding of their personal practice, to understand the type of "image of the child" they have and the type of implicit pedagogy they implement in their work, while achieving a better understanding of children and their potential, along with an insight into the children's self-concept..

Results

According to the constituents described in the methods by the analysis of video footage and the attached photographs, what follows is the description of the results for the experimental and control groups. The control group living room is organised around activity centres where children can to choose an activity and can freely move around the room, choosing what they want to engage with. Tables and chairs are part of the activity centres. The preschool teacher gathers the children around – and following the children's suggestion, organises the activity of riddle solving, during which the children are sitting at or standing around the table. Onthe preschool teacher's initiative, they organise a forest animal race in one part of the room. Children participate in preparing the activity, while the preschool teacher gives instructions. The preschool teacher calls those children who are to participate in the activity, while other children stand still and wait. He reacts to children's individual needs: a boy makes plasticine letters and shows them to the preschool teacher, who asks him to name the letters and encourages him to say words that start with this

letter. The children have at their disposal didactic aids, craft materials and toys, finished materials to play with and toys of various kinds. The atmosphere in the group is pleasant and quiet. The children are mostly gathered around the preschool teacher, who continually talks to them, asks questions, gives answers to children's questions and invites children to participate in ongoing activities (Photograph 1). These children are invited by the preschool teacher, who initiates some activities, and when the activities are initiated by the children, he participates and takes the role of leader.

Photograph 1: The control group – activities in the living room

The experimental group living room is also organised according to activity centres which are marked, while the space between activity centres is filled with stimuli inviting children to try various forms of movement (ramps, tunnels, paths, obstacles, etc.). Through the spatial organisation of the living room and the stimuli offered to children, the preschool teacher shows a high level of trust in children's abilities; he stimulates children to try various types of movements (jumping, crawling through, climbing, mastering resistance, manipulation of objects, etc.), encouraging each child to use his/her individual strategy with the materials (Photograph 2). The preschool teacher prepares aids by which he encourages research and problem solving (sticking different balls on a paper according to the colour of the elevated part), and integrates distinct developmental areas (aiming at a target with plastic balls from marked fields and noting down the result). Most of the materials are unstructured and multiform and can be used in different ways. Music of different rhythms is used to stimulate various types of movement by the children around the room. The atmosphere in the

group is one of "creative chaos"; the children are active and engaged at all times. They choose what they want to do and how they will use the offered stimuli. The preschool teacher is more in the background, observing the children, listening to them and participating if necessary.

Photograph 2: The experimental group – activities in the living room

The hall of the control group is intended for children's games and includes apparatus and pole climbers. Children explore the climbers and play houses, they ride the plastic and sponge balance bikes, drive cars and push shopping trolleys. The stimuli offered to children include a chest, tins to hit, pins and a ball. Children occasionally run across the empty parts of the hall (Photograph 3). The preschool teacher observes what the children are doing, talks to them and explains to children how they can use the chest and the tins to hit. Children need the preschool teacher's care and attention, and they call him to show him how they can aim, at which point the preschool teacher praises them. The atmosphere is peaceful and quiet; the children's soft murmur can be heard.

Photograph 3: The control group – activities in the hall

The experimental group hall is rich in various stimuli: empty and full sandpits and materials to play with sand (buckets, shovels, funnels, tubes, etc.) distributed throughout the hall for the children to move as much as possible; chests and car tyres for walking and jumping; benches intertwined with elastic string where balloons are hung; pools with small and large balls; a basket without a hole hanging from the ceiling, mats, a wooden bridge, chairs and hoops (Photograph 4). The preschool teacher strategically arranges the aids and materials the length of the hall. He sets challenges for the children, who then seek solutions; for example, an empty sandpit, or a basket without a hole at the bottom. Children transfer sand from one sandpit to the other using a range of containers and negotiate obstacles found within the space. They drag benches under the basket, climb on these and, using their arms, empty the balls from the basket through the upper opening. The preschool teacher observes the children and does not give them instructions for the use of the stimuli but monitors how children use them. During the hall activities, children show great interest in playing with the sand and balls. In playing with sand, they are directed more toward individual learning, while in playing with the balls, they revealed "traps" together, tried how they would find the solution and made agreements about the realisation.
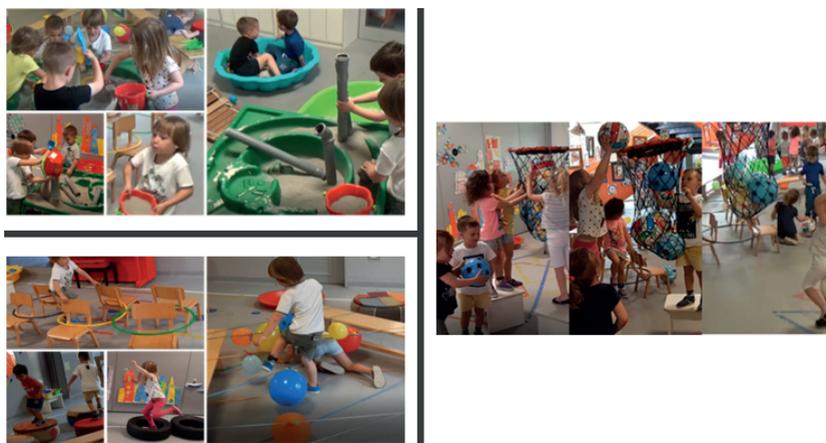
Photograph 4: The experimental group – activities in the hall

The control group enters an empty gym. The preschool teacher makes soap bubbles, which children catch around the room. Some children drive cars and jump on

bouncing balls. The preschool teacher shows the general preparatory exercises with the story of a bear ("The bear says…"), while the children stand around and follow the given exercises (Photograph 5). The preschool teacher suggests an obstacle course, carries in the props together with the children and prepares the exercises. He asks children to help him in preparing the course layout; children scream, wanting to help and running toward the preschool teacher, who then gives instructions about what to take and where to put the props. The preschool teacher invites children to stand in a queue and asks one child to demonstrate the exercises. A girl notices a shadow on the wall and shows it to the preschool teacher, who then supports the girl's initiative and continues playing with the shadows, inviting all other children to join in. The preschool teacher starts the circle game Ringa Roses by gathering the children and inviting them to take part. He calls each child to take part, while before that children stand still and wait for the game to begin.

Photograph 5: The control group – activities in the gym

The gym for the experimental group is organised into motor centres that enable children to master space, obstacles, resistance and manipulation of objects (Neljak, 2009). Children choose the order in which they will use the objects and how. There is no waiting or standing in a queue; the children's activities occur continually and according to children's needs and interests (Photograph 6). Children adapt certain tasks according to their own discretion and change the appearance and function of the exercise location. The preschool teacher does not lead any activity. He is present in the gym and supports children in mastering more demanding tasks (he stays in their vicinity, offers a hand to children only if they ask him and fixes the elements). He monitors how a certain child masters an apparatus and changes the exercise

(making it more difficult or easier) depending of the children's abilities. The preschool teacher's high level of trust in the children's abilities can be seen, and those abilities, along with safe conditions, form challenging situations for the child. The children are extremely active during activities in the gym; they are constantly on the move, thus acquiring motor knowledge in many ways. In this dynamic and stimulating environment, one can hear them screaming and laughing while they communicate and interact with each other.

Photograph 6: The experimental group – activities in the gym

The yard for the control group is spacious, with many flat surfaces. There is different equipment for playing and exercising (Photograph 7). The stimulus offered to children for outdoor activities is a parachute, while several children play with balls. Most of the children are on the grass and gravel surfaces, where they explore, individually or in small groups, natural materials: sand, rocks, wood, sticks, etc. During the parachute activity, the preschool teacher gives instructions to the children ("…for this ball not to fall in, because then Tihana (the other preschool teacher, researchers' remark) and I are the winners. Ok? So, I will throw it here in the middle, and you have to raise it and bring it down like that so that the ball does not fall in in the hole."), and demonstrates. Both preschool teachers suggest that the children raise and lower the parachute quickly and strongly. Children who do not participate in the activity stand aside and observe and/or clap their hands. The preschool teacher invites them to participate, too. During the parachute game, the children are happy; they laugh and scream.

Photograph 7: The control group – outdoor activities

The yard of the experimental group is smaller and less equipped with exercise equipment and pole climbers than the yard of the control group. The only equipment is a small slide with a small house, a plastic tunnel-train and bicycles. The photographs of activities conducted in the yard show that the preschool teacher uses natural materials (sand and water), and various unstructured material to make the outdoor space more stimulating and attractive to children. Among the materials used, there are containers of different heights and depths, pools, sprinklers, plastic bottles and glasses, buckets, etc. (Photograph 8). There are also chairs and an elastic band, bicycles and a tunnel for climbing and crawling through – which did not attract any of the children. All of them participate in the water and sand activities. Assuming different positions, children explore the characteristics of water and sand: crouching, kneeling, lying down, standing on their toes to reach higher parts of the construction to test the flow; they run or walk fast in search of what they need (the preschool teacher arranged the material strategically for the children to move as much as possible, looking for and finding what they need). They carry the sand and water to different places, sprinkle and pour; they explore how the constructions work for the exploration of flow. What could be observed was constant communication and interaction among the children; they ma;e agreements on who was going to do what ("First Jakov, then Lara, then me. Now, Jakov, I am going to fill it in (the sprinkler, researchers' remark). Now me. Now Lara. Jakov gives it to me, I give it to Lara."), or they find solutions (Mara: "You made me wet!", Filip: "No, it will dry!"), and they often make declarations such as, "It's so funny!". The preschool teacher observes the children, documents (takes photographs) and remains alert to see if his inclusion is needed. He takes part in activities when children ask him to, usually to show him what they have observed, for instance, water sprinkling from a punctured bottle, or an empty plastic bottle floating on the water surface.

Photograph 8: The experimental group – outdoor activities

The results obtained from analysis of the video footage and photographs of the activities in the living room, hall, gym and outdoor space of the control and experimental groups show that there are significant differences in the spatial organisation and the spatial-material environment, the way the material and equipment for children's games and learning is used, the way preschool teachers apply educational strategies arising from their implicit pedagogy and their image of the child and children's activities, their (pro)activity, engagement and learning strategies, which to a great extent defined the atmosphere of each educational group.

Discussion

Results have shown that there is a significant difference between the educational group conducting children's integrated learning (the control group) and the educational group where the educational work is based on integrated learning with movement (the experimental group). Although both the control and experimental groups conduct the integrated approach in planning their educational work, the experimental group conducts the approach where all children's activities are linked to movement. This form of work enables children to satisfy their need for movement, but also to enjoy the learning process, which stimulates them to further construct and co-construct knowledge. Children link a certain purpose for a space and certain occurrences and actions therein to personal experience, depending on how comfortable they feel in it and to what extent the space is stimulating for taking action. This is one of the contemporary teaching challenges that can only be met by preschool teachers who enhance their competences, especially for creativity and innovation (Lepičnik-Vodopinec et al., 2020).

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The spaces where the activities took place are presented separately in the results, with the intention of showing that children's need for movement and learning cannot and should not be narrowed to spending the whole day in one room. Therefore, in well organised institutionalised conditions, children should have the advantage of a wide range of movement, while different spots in the rooms should be filled with items that attract children's attention and stimulate the development of sensorimotor skills and pro-social relationships, giving them an abundance of new information (Petrović-Sočo, 2007). In the discussion, the spaces will also not be separated (the living room, hall, gym and outdoor spaces) because the results show that, according to the evaluation constituents, the same information is recorded in all the spaces. In the experimental group, the space is organised so that the activities taking place have high educational potential, where the richness and variety of the material awake the children's interest and initiate meaningful, purposeful processes linked to numerous opportunities for moving and learning. The spatial organisation constantly determines the children's behaviour, which can be observed in the quantity and quality of movement by children in the experimental group, and which differs from the control group where there is much less movement. Although there is much more room in the spaces used by the control group (empty parts of the space), these children move much less. On the other hand, the experimental group, along with the existing activity centres, has transitions from centres which have been designed as challenges for different types of movement. Malaguzzi (according to Petrović-Sočo, 2007) highlights that children's movement, along with independence and interaction, is one of the three basic requirements that a space must fulfil. Therefore, one of the basic questions is: how can one create a stimulating, developmentally adequate environment? There is no theory (or theories) to be learned and applied in practice, but the stimulating environment must be created jointly and built by doing and participating in the continual research of educational practice. By their educational strategies, preschool teachers give a significant contribution to the differences observed. The experimental group preschool teacher prepares aids and materials that the children choose themselves, enabling them to integrate different areas of knowledge. Going by the children's reactions and engagement, they find these activities interesting and challenging, and they are strongly motivated. Senge (2007) defines such learning as real learning, since it is connected and happens holistically (includes more than the "head" alone), and is directly connected to action, with an everyday life context, and together with other

children. Contrary to the control group preschool teacher who initiates children's activities and is the one mostly "heard and seen" on the video material, the experimental group preschool teacher creates the preconditions for children's activities, observes the children, tries to offer the best support for their development (participates indirectly). This experience leads to the conclusion that the quantity of preschool teachers' direct interventions does not imply a better relationship with the child. Miljak (2009) emphasizes that we adults teach children fragmentation from an early age, while children persistently teach us wholeness, integration of what they explore and experience; they teach us to connect with life situations, while we remain deaf and insensitive to their warnings. The same author claims that the activities parents choose for children are usually linked to certain areas; instead, they should offer them activities that integrate more areas, while such chosen activities are "deadly boring", and children try to get rid of them as fast as possible, respecting the preschool teacher's choice and decision. In his effort to protect children ("so that nothing bad happens to them"), the control group preschool teacher restrains children from free movement and research and prevents them from experiencing the world around them with their whole body. By these procedures, he sends feedback information to children about his opinion of them, his experience of them and the image of them he has: by unnecessarily helping children (for instance, to descend the pole climber), he implicitly sends the message that he considers them incapable, or by giving lots of advice ("take care, you are going to fall down like a ???," "not yet, stop, wait," "stand still," "come on, put that there" etc.), he shows that he does not trust them or he doubts their competence. The experimental group preschool teacher offers challenges to children, for instance, stimuli that invite children to climb, jump, crawl through, manipulate various objects, etc., giving them the equipment, but not ready solutions (to grab something that has been placed high on purpose, the child drags a bench or chair, alone or in cooperation with other children, and then climbs it). Such procedures allow children to take responsibility for their acts, to take care of themselves and their own safety, to share responsibility with others and learn in real-life situations. Such contemplation produces the image of a "rich child" who is competent and wants to face the world, a child whose learning is a cooperative and communicative activity, where the child creates knowledge and gives meaning to the world (Vujičić, 2017). Since children have innate curiosity and wonder, they do not need to be especially stimulated to explore the world; they already do that themselves, while preschool teachers have to show a

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high level of confidence in children and their abilities, give them opportunities to do that, and under no circumstances restrain them.

The experimental group children have the full support of the preschool teacher for various types of movement, regardless of the time or spatial context; in this way, confidence in their readiness to face challenges and in their ability has been shown, which has a significant effect on the development of independence, self-consciousness, skilfulness, resoluteness and initiative. It is considered important to highlight the familiar fact, also evident in these research results, and that is the children's interest in playing with natural materials: water, sand, wood, grass, rocks, etc. The experimental group children were offered sand and water, and various tools and items of equipment to explore the natural materials in their activities. It was presupposed that the children's interest in research activities with water and sand would be high, which proved to be true; so, the materials for playing and research were offered at different locations for two reasons: to make children move and avoid unnecessary crowding at any one location. The control group children were not offered any natural material, but in their outdoor space the children found rocks, soil, a stick and grass, which they used in play and for individual (a boy who observes and explores grass) and group (boys dig a hole in the sand with rocks) research activities. The assumption was that the experimental group children would move less because of the available natural materials (sand and water) and various tools they could use to explore these materials' characteristics. However, even in such a context, the experimental group children moved twice as much as the control group children (there are quantitative indicators of this fact). It is natural for children to seek movement in all situations, and this is an integral part of integrated learning (Petrić, 2019). The experimental group children live in such a way, i.e. they live and learn by moving. The approach of the experimental group in planning and shaping the integrated curriculum includes children's integral development, while the educational process is organised so that each child, according to abilities, needs and interests, chooses activity content and, individually or in cooperation with others, learns by doing, thus actively building knowledge. A rich, polymorphic spatial-material arrangement that invites children to move and offers them a variety of challenges represents motivation for each child to perform motor tasks and learn through movement. It is more important to support the development of children's creative thinking than to strive to develop unique competences (Bašić, 2011).

Children bring their potential (resources) to their own education, and in the context of the opportunities on offer, they develop and differentiate them, which leads to the multiplicity of individual possibilities in children's ways of thinking and acting (Bašić, 2011). Children's activity does not mean to actively perform what adults expect from them, but the contrary. Children have their own theories, which need to be respected, and individual strategies of thinking; they seek solutions and learn. Knowing the individual potential of each child is the basis for further educational processes because there is no general, universal child nature, nor do all children need the same things for optimal growth. Each child's individuality should be considered, and one should be aware of the existence of differences among children, because not all children master motor knowledge at the same pace (often not even at a close pace), nor are there two identical performances (Petrić, 2019). Children in the same educational group will differ in their knowledge, abilities, interests, attitudes and other characteristics; therefore, it is important to insist on an individualised and flexible educational approach that allows the fulfilment of children's distinct needs and interests, and the recognition and affirmation of their identity, abilities and talent (Petrić, 2019).

Conclusion

The research results indicate significant differences between children attending educational groups in which integrated learning and movement-based integrated learning are conducted. Both groups, the experimental and the control, base their educational process on the integrated approach in planning the educational work, but in the experimental group, emphasis is placed children's activities linked to movement. Such an approach allows children to satisfy their need for movement, but also to enjoy the learning process, which then stimulates them to further construct and co-construct knowledge. Integrating learning with movement is a theory derived from practice. This theory reveals and creates new knowledge integrated into educational practice; by using these, new horizons and spaces to reveal and create new knowledge can be made. The approach to the common creation of theory and practice corresponds to the idea that educational theory is inseparable from practice, i.e. that "real" theory is generated from within practice (Miljak, 2007, 2009, 2015; Petrović-Sočo, 2009, 2011; Slunjski, 2012; Vujičić, 2016). Miljak (2015) advocates the construction theory, according to which the curriculum

is co-created by the joint construction of knowledge by all community members, and represents the formation and development of a new identity for all the individuals in a community and the community itself. Because spatial organisation determines children's behaviour, it was noted that the spatial equipment and richness of materials and aids for playing and learning affect the quality and quantity of children's movement, learning and exploring, irrespective of the place (equally for the living room, gym, hall or outdoor space). By their educational strategies, preschool teachers contribute significantly to the differences that were noted, and it can be concluded that the quantity of preschool teachers' direct interventions implies neither a better relationship with the child, nor better opportunities for learning. The theory derived from this research opens a new direction in the children's integrated learning approach and to the development of the educational process in early and preschool education in general. The results show a significant effect of movement-based integrated learning on the quality of the educational process; it is thus very important to direct attention to further studies of this theory.

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POSKUS KONCEPTUALIZACIJE TALENTIRANOSTI NA ŠPORTNEM PODROČJU

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Izvleček/Abstract Namen prispevka je predstaviti interdisciplinarno problematiko nadarjenosti in talentiranosti v slovenskem osnovnošolskem sistemu ter poskus smiselne terminološke umestitve obeh terminov na področju športa. Kljub precejšnji pozornosti raziskovanja razvoja razumevanja nadarjenosti v odnosu do talentov, talenti v športnih okoljih ter aplikativna vrednost konceptualizacije nista znana. Eden od razlogov za to je, da termin *športni talent* tudi v slovenskih programskih in zakonodajnih izhodiščih ni bil ustrezno definiran.

Conceptualization of Talent in Sport The purpose of this paper is to present the interdisciplinary problem of giftedness and talent in the Slovene elementary school system and attempt to meaningfully interpret the terminology of both terms for the field of sport education. Despite the considerable attention paid to researching the changing understanding of giftedness in relation to talent, talent in sports environments and the applicable value of conceptualization are still not known. One reason for this is that sports talent has not been adequately defined in the Slovenian program and legislative platforms.

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Teoretično ozadje pri raziskovanju razvoja talentov – *nadarjenost* proti *talentiranost*

Nadarjenost

Splošni modeli nadarjenosti se nanašajo na zgodnje znanstveno raziskovanje nadarjenosti in temeljijo na splošnejši razlagi nadarjenosti, kjer so bili termini, kot so »nadarjenost«, »genialnost« in »talentiranost« razumljeni kot sinonimi (Kukanja Gabrijelčič, 2017). Novo paradigmo nadarjenosti, ki sega preko ozkega merila, tj. visokega inteligenčnega kvocienta, je postavil Feldman (1991 v Piirto, 2007, str. 23), ki ozko intelektualno nadarjenost razširi na številna druga področja. Nadarjenost označi kot razvojni proces, ki se realizira na podlagi številnih domen; splošne, sociokulturne, specifično predmetne, idiosinkratične (lastne, specifične) in samosvoje. Sumption in Luecking (1960) pojasnjujeta, da je nadarjen tisti, ki ima razvitejši živčni sistem okarakteriziran s potencialom za reševanje nalog, ki terjajo visoko stopnjo intelektualne domišljije. Ključno zasnovo k opredelitvi termina je dodal Renzulli (1978, 2016), ki trdi, da so za izjemne dosežke na specifičnih področjih aktivnosti nujne nadpovprečne sposobnosti, nadpovprečna ustvarjalnost in nekatere osebnostne lastnosti, zlasti zavzetost za opravljanje nalog, pogojena s specifično motivacijo. Razmeji nadarjenost in potencialno nadarjenost, saj identifikacija posameznika, da »je nadarjen«, še ne pomeni trajne lastnosti, prav tako pa ne zagotavlja, da bo posameznik dejansko realiziral svoje sposobnosti. V svojem trikrožnem modelu nadarjenosti razlikuje med splošnimi sposobnostmi (kot so procesiranje informacij, povezovanje izkušenj, abstraktno mišljenje) in specifičnimi (kot so sposobnost pridobivanja znanja, izvrševanja nalog oziroma aktivnost) (Renzulli, 2016).

Kompleksnost definicije nadarjenosti v svetu je prisotna predvsem zaradi preozkega koncepta oziroma meril, ki ne vključujejo merskih instrumentov za merjenje inteligenčnega količnika (ang. Intelligence Quotient, IQ) posameznika. Zaradi tega so v Združenih državah Amerike sprejeli različne opredelitve, ki se medsebojno dopolnjujejo in bogatijo: npr. NAGC – ang. National Association for Gifted Children; JAVITS– ang. The Javits Act (Jacob Koppel Javits, 1904–1986); OERI – ang. Office of Educational Research and Improvement, Gagnéjeva definicija (Françoys Gagné, 1940–), Renzullijeva definicija (Joseph Renzulli, 1936–) itd. V slovenskem prostoru je danes najpogosteje uporabljena Marlandova definicija (Sidney P. Marland, 1914–1992) iz leta 1972, ki navaja, da so nadarjeni in talentirani

otroci tisti, ki jih je identificiralo usposobljeno strokovno osebje, da imajo resnično visoke sposobnosti in zmožnosti visokih dosežkov (Koncept odkrivanja in dela z nadarjenimi učenci, 1999). To so otroci z izkazanimi in/ali potencialnimi visokimi dosežki na naslednjih področjih: (i) splošne intelektualne sposobnosti; (ii) specifične učne zmožnosti ali sposobnosti (šolske zmožnosti); (iii) ustvarjalno ali produktivno mišljenje; (iv) voditeljske sposobnosti; (v) umetniške sposobnosti; (vi) psihomotorične sposobnosti (Ferbežer, 2002, str. 33; Koncept odkrivanja in dela z nadarjenimi učenci, 1999; Marland, 1972; Žagar idr., 1999). Opredelitev termina nadarjenost se je spreminjala predvsem pod vplivi družbeno preoblikovanih vzgojnih ciljev, saj so se prejšnje opredelitve nadarjenosti usmerjale predvsem na nadpovprečne osebnostne karakteristike ali različne omejitve šolskega okolja (Binet, Simon, 1976; Coleman, Selby, 1983; Ferbežer, 2002; Sumption, Luecking, 1960; Witty, 1940).

Talentiranost

Ključno terminološko vprašanje in problematika, ki sta v svetu še vedno zapostavljena izpostavljata predvsem dejstvo, da na specifičnih predmetnih področjih še vedno ni zakonskih terminoloških opredelitev, ki bi ločila nadarjene in specifično nadarjene – talentirane učence. Nekateri avtorji podajajo kot opredelitev nadarjenosti v primerjavi s talentiranostjo naslednje: (i) nadarjenost kot višja stopnja talentiranosti (nadgradnja); (ii) nadarjenost kot nasprotje še nedokončno razvitih talentov (Barnes, 2007; Bates, Munday, 2005; Gagné 1985; 1991; 2003; 2005 idr.). Večina držav v Evropski uniji poimenuje nadarjene kot mlade osebe z velikim potencialom, izjemnimi sposobnostmi; intelektualno napredne otroke; v Sloveniji pa sta uradno uporabljena termina *nadarjen* (posebej nadarjen) in *talentiran* (Eurydice, 2006; Koncept, 2009).

Znanstvena teorija in literatura (Barnes, 2007; Bates, Munday, 2005; Gagné, 1985; 1991; 2003; 2005; Hopkinson, 1978; Karnes, Bean, 2005; Porter, 2005; Wallach, Wing, 1969 idr.) s področja nadarjenosti oba termina (nadarjenost in talentiranost) ne navaja ločeno, temveč integrirano v znanstveno-strokovno terminologijo. Predvsem je poudarjen pomen obravnave in identifikacije talentov na podlagi določenih domen, razvoja in znanstvenih dognanj. Piirto (2007, str. 22) pri tem ugotavlja, da posameznikov visok inteligenčni kvocient še ne pomeni, da ima tudi talent na določenem področju. Pomembno spoznanje dodaja Feldhusen (2003a v Piirto, 2007, str. 24), ki pojasnjuje, da človekovih talentov ne smemo omejevati zgolj

na kognitivne sposobnosti, ki se odražajo na akademskem področju, temveč moramo v sodobnem svetu prepoznati njihov širši sklop, saj so pomembni za družbeno blaginjo in razvoj na številnih področjih. Piirto (2007) pri tem poudarja, da moramo pri opredeljevanju terminov stopiti izven psiholoških merjenj (kot glavnega kriterija oziroma merila) ter postaviti v ospredje definicijo talentiranosti, ki bo izhajala iz tipičnih karakteristik, ki jih imajo ti na številnih področjih. Tako je tudi v našem programskem dokumentu – Konceptu (1999) navedeno, da so talentirani tisti posamezniki, ki imajo visoke sposobnosti na specifičnih področjih (športno, glasbeno, umetniško, naravoslovno ipd.). Kljub različnim terminološkim in teoretičnim opredelitvam se strokovnjaki znova opirajo na enotno izhodišče pri navajanju nadarjenosti in talentiranosti. Eksplicitno in implicitno poudarjajo razliko med obema, ki se kaže predvsem z (i) zgodnjim razvojem (stopnjo) pojava nadarjenosti, ki je posledica naravnih danosti in ima biološke, dedne korenine, ter (ii) zrelim, popolnoma razvitim, zaključnim pojavom nadarjenosti (Ferbežer, 2002; Gagné, 2003, 2005; Piirto, 2007). V skladu s Sternbergovo in predvsem Gardnerjevo teorijo o različnih vrstah inteligentnosti (2006) ostaja velika večina izrednih talentov ločenih od drugih sposobnosti, ki jih učenci izkazujejo. Prav tako so merski instrumenti naravnani k merjenju in odkrivanju splošnih področij nadarjenosti in potemtakem specifična, netradicionalna področja talentiranosti pogosto nimajo ustreznega instrumenta, ki bi tovrstne talente identificirali.

Talentiranost je začel intenzivneje preučevati Gagné (1985; 1991; 2003; 2005), ki v svojem »Modelu razvoja talentov« (1991) opisuje talentiranost kot »[...] razvojni produkt interakcije med sposobnostmi, intrapersonalnimi in okoljskimi katalizatorji«. Po Gagnéju (1991; 2003; 2005) je opredelitev terminov nadarjenost in talentiranost naslednja:(1) nadarjenost: označuje lastnosti, prirojene sposobnosti in naravne danosti, ki jih ima posameznik vsaj na enem določenem področju. Nadarjenost je po njem opredeljena kot sposobnost, ki privede do realizacije talenta; (2) talentiranost: označuje zunanje pogojene, sistematično razvite sposobnosti, imenovane kompetence (znanje in spretnosti) na vsaj enem področju človeške aktivnosti. Predstavljene skupne karakteristike so tudi razlog, da mnogi oba termina med seboj združujejo in morebiti tudi pomešajo oziroma navajajo kot sinonima. *Nadarjenost je namreč najpogosteje povezana s splošno intelektualno sposobnostjo posameznika, talentiranost pa zajema specifične sposobnosti, ki segajo na mnogotera akademska in druga področja* (Barnes, 2007; Bates, Munday, 2005; Bezić idr., 1998; Hopkinson, 1978; Karnes, Bean, 2005; Porter, 2005; Wallach, Wing, 1969).

Glede na zgoraj predstavljene teoretične podlage lahko izluščimo, da so nadarjeni učenci tisti, ki dosegajo visoke dosežke na številnih (splošnih) akademskih področjih hkrati, talentirani pa so učenci, ki izstopajo na določenem, specifičnem področju – bodisi na umetniškem, socialnem, športnem bodisi drugem.

Nadarjen ali talentiran na športnem področju?
Nadarjenost je lahko splošna ali specifična. Za visoko splošno sposobnost, ki omogoča doseganje izjemnih rezultatov na več področjih hkrati, uporabljamo termin »nadarjenost«, za visoko specifične sposobnosti, ki vodijo do uspeha na posebnih področjih, pa termin »talentiranost«. Govorimo torej o splošno nadarjenih in specifično nadarjenih ali talentiranih. (Bates, Munday, 2005; Bezić idr., 1998; Gagné 1985; 1991; 2003; 2005).

Nekatere države (npr. Velika Britanija) postavljajo zelo jasno ločnico med terminoma, saj je s terminom »nadarjen« opredeljen predvsem posameznik z visokimi intelektualnimi oziroma akademskimi dosežki (potenciali), »talentiran« pa je tisti, ki dosega visoke dosežke na področju umetnosti in športa (Eurydice, 2006). Nadarjeni imajo visoke potenciale (zgornjih 10 % porazdelitve v referenčni skupini) na intelektualnem (splošni in specifični), ustvarjalnem in drugih osebnostnih področjih (socialni, čustveni in motivacijski), ki skozi vedenje vodijo do dosežkov na učnem, znanstvenem (splošnem ali specifičnem), gibalnem ali na umetniškem področju.

Če so za izkazovanje nadarjenosti na splošnem področju potrebne: (i) visoka splošna inteligentnost, (ii) ustvarjalnost in (iii) osebne karakteristike (Renzulli, 2016), pri izkazovanju talenta (talentiranosti) ni povsem tako. Potrebna ni toliko kognitivna komponenta, temveč predvsem: (i) umske in telesne predispozicije, torej sposobnosti in zmožnosti, s katerimi se rodimo; (ii) vpliv okolja (družinskega, šolskega in širšega družbenega) ter (iii) samoaktivnost posameznika.
Talenti so torej specifični za določeno področje. Med slednje spada tudi gibalno oziroma psihomotorično področje, če posameznik dosega visoke dosežke le na slednjem. Ko pa dosega visoke (nadpovprečne) dosežke tudi na splošnointelektualnem (akademskem) področju, potem govorimo o nadarjenosti. Baker (2003) pri tem definira talent v športu na osnovi štirih skupin kazalnikov: (i) antropometrijski kazalniki, (ii) fiziološko-gibalni kazalniki, (iii) psihološki kazalniki in (iv) sociološki kazalniki. Gre torej za kazalnike na področju (i) meritve

antropometričnih dimenzij; (ii) fizioloških in gibalnih dejavnikov (višje razvite gibalne sposobnosti); (iii) psiholoških dejavnikov, ki vključujejo zaupanje, zbranost/pozornost, pričakovanje, odločanje, ustvarjalnost in inteligenco igre. Pri talentiranih športnikih je višja tudi samozavest, nižja je stopnja tesnobe ter višja mentalna koncentracija; (iv) socioloških vplivov, npr. starševska oziroma družinska podpora, socialno-ekonomski status družine, priložnosti za prakso in izobraževanje, osebni vložek – obseg treningov, kulturno ozadje, odnos med trenerjem in športnikom (Williams in Reilly, 2000).

Kdo so talentirani učenci na športnem področju in kako jih lahko evidentiramo/identificiramo?
O talentiranem posamezniku na športnem področju govorimo, ko v gibalnih, psihomotoričnih ali senzomotoričnih spretnostih dosega zgornjih 10 % porazdelitve v referenčni skupini in se odlikuje predvsem v natančnosti, občutljivosti (čutila), gibalnih spretnostih in sposobnostih (koordinaciji, ravnotežju, moči in vzdržljivosti), natančnosti opazovanja, posluhu, občutku za gibanje idr. (Vaeyens idr., 2008). Športna talentiranost v gibalni kulturi in športu je odvisna od psihomotoričnih sposobnosti. Struktura psihomotoričnih sposobnosti otrok mora vključevati vrsto senzoričnih, gibalnih in kognitivnih veščin, in sicer: (1) učinkovito samokontrolo in samoregulacijo gibalnih aktivnosti; (2) fino diferenciacijo občutljivosti in prilagajanje gibov na glavne kontrolne parametre (čas, prostor, napor, hitrost, ritem); (3) odzivnost in učinkovitost regulacije gibalnih aktivnosti; (4) dober gibalni spomin; (5) močno voljo po regulaciji gibanja; (6) psihomotorično zmogljivost in zanesljivost (Petkova in Grebennikovaa, 2016). Škof (2010) ob tem navaja najpomembnejše gibalne sposobnosti, kot so: mišična moč, gibljivost, koordinacija, ravnotežje, agilnost in funkcionalno sposobnost – aerobna ter anaerobna vzdržljivost. Schmidt in Lee (1999) – poleg omenjenih gibalnih sposobnosti in spretnosti – izpostavljata še druge, in sicer preciznost gibanja, reakcijski čas, ročne spretnosti, spretnosti prstov in dobro časovno načrtovanje (tajming). Petkova in Grebennikovaa (2016) pa navajata, da so za gibalno talentiranost zelo pomembni: (i) izjemna odzivnost in moč, ki se kaže v hitrosti posameznika; (ii) učinkovitost, ki je označena kot vzdržljivost ali sposobnost upiranja utrujenosti; (iii) usklajevanje gibanj, ki se kažejo kot agilnost.

To se pravi, da posameznik, ki ima razvito specifično nadarjenost (talent) na gibalnem področju, ima omenjene gibalne sposobnosti in spretnosti zelo dobro razvite ter jih zna ustrezno uporabiti za doseganje vrhunskih športnih dosežkov. Prav zato je za razvoj psihomotoričnih sposobnosti talentiranih učencev ključno, da vključuje: (i) izboljšanje komponente gibalnega delovanja; (ii) izboljšanje nadzora senzorskega gibanja; (iii) učinkovito shranjevanje in priklic vzorca psihomotoričnih spretnosti. Škof (2010) ob tem poudarja tudi pomen dedne zasnove in osebnostnih lastnosti posameznika, ki so hkrati tudi sestavni deli Renzullijevega trikrožnega modela nadarjenosti (Renzulli, 2016). Talentiranost definira tudi Vaeyens s sodelavci (2008), ki navaja, da slednjo določimo na podlagi uspeha in/ali atletske sposobnosti znotraj tekmovalnih starostnih skupin. Vendar pa je celoten proces identifikacije in razvoja odvisen od telesne konstitucije, biološkega in vedenjskega razvoja ter njihovih različnih interakcij. Škof (2014, str. 567) pri tem poudarja, da lahko odmevne športne uspehe dosegajo le tisti posamezniki, ki imajo za določeni šport izredne biološke in psihosocialne sposobnosti, ki so dedno zasnovane (pogojene). Pri tem velja omeniti tudi dejstvo, da ima vsak posameznik svojo unikatno dinamiko tako biološkega kot psihosocialnega razvoja. Ker se razlike v dinamiki razvoja med posamezniki v številnih primerih močno povečajo v obdobju pubertete, zelo otežujejo zanesljivost napovedovanja športne ustvarjalnosti v odraslosti glede na stanje v otroškem ali mladostniškem obdobju (Škof, 2014). Najpomembnejši pokazatelj biološke zrelosti je starost, v kateri mladostniki prehajajo skozi svoj glavni mladostniški vzpon, ki je znan kot najvišja hitrost rasti. Poudariti moramo, da se mladostniki, rojeni v istem letu, lahko v biološki starosti razlikujejo tudi za let (Shepard in Astrand, 1992). V praksi tako lahko naletimo na veliko mladih talentov, ki pa to v resnici niso, saj gre morda le za zgodaj odraščajoče otroke oziroma mladostnike, ki imajo zaradi hitrejšega razvoja prednost pred vrstniki. Taki kasneje v svojem razvoju ne kažejo pričakovanega napredka in praviloma zapustijo šport. Prednost zgodnjega biološkega razvoja v mladostništvu pa se mnogokrat pokaže kot negativni vpliv na športno uspešnost v kasnejših obdobjih (Škof, 2014, str. 568). Posamezne razlike v biološkem razvoju torej neposredno in posredno vplivajo na postopek prepoznavanja talentov (Cumming idr., 2012), telesne in funkcionalne značilnosti pa so pomembna socialna spodbuda za tiste, ki sodelujejo pri prepoznavanju in razvoju mladih športnih talentov (Cumming idr., 2005; 2012).

Pri evidentiranju (nominaciji) in kasneje identifikaciji oziroma diagnosticiranju izjemnih dosežkov na psihomotoričnem in senzomotoričnem področju se med dokazila za izjemne dosežke štejejo (Koncept, 1999), recimo, (i) športna tekmovanja iz posameznih panog oziroma s področij (udeležba in dobri rezultati na regijskih in državnih tekmovanjih) ter (ii) izjemni dosežki na gibalnem področju. *Kateri so izjemni dosežki, žal, Koncept (1999) ne specificira in s tem dopušča morebitno subjektivno interpretacijo učitelja, ki otroka/učenca nominira ali identificira kot specifično nadarjenega.*

Tako imamo po Konceptu (1999) opredeljene naslednje faze odkrivanja športnih talentov, in sicer:
(1) evidentiranje učencev na osnovi različnih kriterijev, npr. (i) dosledno izkazovanje odličnega učnega uspeha pri predmetu šport; (ii) strokovno mnenje učitelja o učencu, ki si ga oblikuje med vzgojno-izobraževalnim procesom; (iii) športni tekmovalni uspehi učenca na regijskih in državnih tekmovanjih; (iv) hobiji oziroma močan interes učenca za trajnejše aktivnosti na področju športa in v katerih dosega nadpovprečne rezultate.
(2) Identifikacija nadarjenih in talentiranih učencev pa v nadaljevanju obsega podrobnejšo obravnavo evidentiranih učencev in vključuje: (i) oceno učiteljev; (ii) test sposobnosti in (iii) test ustvarjalnosti.

Poudarjamo, da se mora diagnosticiranje športnih talentov razlikovati od drugih diagnostičnih prijemov. Za identifikacijo splošne nadarjenosti se uporablja podatke, pridobljene z različnimi vrstami psihodiagnostičnih inštrumentov za merjenje inteligentnosti in ustvarjalnosti, podatke o učni uspešnosti pri različnih predmetih, o rezultatih ocenjevalnih lestvic za učitelje, informacije o dosežkih v različnih aktivnosti (tekmovanja, razstave, nastopi …) ter druge informacije o nominiranem učencu.

Učitelji lahko podajo najbolj verodostojno oceno o gibalnih sposobnosti učenca s pomočjo (1) športnovzgojnega kartona (Štemberger in Filipčič, 2014) ter s pomočjo (2) ocenjevalne lestvice OLNADO7 (Koncept, 1999). Športnovzgojni karton je nacionalni sistem, s pomočjo katerega redno spremljamo in ovrednotimo telesni ter gibalni razvoj otrok in mladine, starih od šest do 19. let (Kovač idr., 2011; Štemberger in Filipčič, 2014). Skladno s šolsko zakonodajo morajo obvezno podatkovno zbirko voditi vse slovenske osnovne in srednje šole za tiste učence in dijake, od katerih pridobijo pisno soglasje (Kovač idr., 2011). Otroci in mladina ter

njihovi starši lahko s pomočjo podatkov športnovzgojnega kartona spremljajo telesni in gibalni razvoj otrok, športni pedagogi pa pridobijo pomembne informacije o njihovem razvoju. Športni pedagog lahko s pomočjo rezultatov celotne populacije slovenskih otrok prepozna tiste učence, ki so nadpovprečni na področju gibalnih sposobnosti (Štemberger in Filipčič, 2014). Športnovzgojni karton ima torej v slovenskem osnovnošolskem sistemu izredno pomembno vlogo pri evidentiranju (nominaciji) in identifikaciji športnih talentov, saj drugih merskih pripomočkov za odkrivanje tovrstne skupine otrok, žal, še nimamo.

Predlogi se nanašajo predvsem na *konkretizacijo diagnosticiranja, ki presegajo učenčev športnovzgojni karton, tj. v smislu oblikovanja konkretnejših meril, s katerimi učenca uvrstimo v gibalnih, psihomotoričnih ali senzomotoričnih spretnostih v zgornjih 10 % porazdelitve.* Sem naj bi sodile kategorije, kot so: (i) doseženo eno izmed prvih treh mest na državnem nivoju, (ii) status perspektivnega športnika, potrjen s strani panožne zveze, (iii) mednarodno tekmovanje z doseženim visokim rezultatom (ponovno zgornjih 10 %), (iv) uvrstitev v državno reprezentanco v posamezni športni panogi ipd., kjer pa ne smemo izključevati drugih zunanje pogojenih dejavnikov, ki vplivajo na realizacijo športnega talenta. Na Fakulteti za šport Univerze v Ljubljani so tako razvili nekatere ekspertne sisteme in metode za ocenjevanje in odkrivanje talentiranosti otrok kot pomoč staršem in strokovnim kadrom pri sprejemanju (kar se da) pravilnih odločitev glede vključevanja otrok v posamezni šport (Jurak, Kovač in Strel 2005a, 2005b; Čoh, 2017). Te metode temeljijo na uporabi specifičnih testov za ugotavljanje posameznikovih morfoloških in gibalnih sposobnosti, ki pa niso tudi zanesljiv pokazatelj bodoče realizacije talenta in visokih športnih dosežkov.

Identifikacija talentov in izbor mladih v šport predstavljata začetek procesa selekcije – ene od najbolj izrazitih značilnosti tekmovalnega športa, ki poteka skozi športnikovo celotno pot (Škof in Bačanac, 2007). Danes je selekcija znanstveno zasnovana na najvišji možni strokovni ravni, tako da nenehna skrb za odkrivanje in razvoj mladih potencialov ni več prepuščena naključju (Škof in Bratina, 2016). Znanstveno zasnovo je selekcijski postopek dobil, da bi perspektivnim športnikom že v rani mladosti omogočili optimalne okoliščine za razvoj v vrhunske športnike. Poleg (i) selekcijske metode, se danes uporabljajo tudi druge metode identifikacije in selekcije otrok, ki so ustrezno znanstveno podprte; npr. (ii) uporaba testnih baterij s področja morfologije, osnovne in specialne motorike, (iii) situacijska in funkcionalna diagnostika ter (iv) psihološki in sociološki testni protokoli (Čoh, 2017).

V te postopke so vključeni vrhunski eksperti, ki poskušajo objektivizirati in ovrednotiti pridobljene rezultate. Slednji pa vsekakor niso povsem zanesljivi, saj kombinacija gibalnih sposobnosti, psiholoških dejavnikov, kognitivnih sposobnosti, biološkega in psihosocialnega razvoja vpliva na različen tempo in dinamiko razvoja športnega talenta pri posamezniku. Naravna metoda izbora talentiranih posameznikov, ki je pod velikim vplivom biološke zrelosti (antropometričnih lastnosti) in socialno-ekonomskega statusa družin mladih športnikov, ne daje ravno najboljših rezultatov z vidika dolgoročnega razvoja športne ustvarjalnosti ter zajetja čim večjega števila resničnih talentov (Škof in Bratina, 2016).

Naj ponovno opozorimo, da je identifikacija na specifičnem, tj. športnem oziroma gibalnem področju lahko tudi diferencirana, kjer seveda ni treba izvajati vseh drugih diagnostičnih korakov (test inteligentnosti, test ustvarjalnosti), kot jih predvideva Koncept Odkrivanja in dela z nadarjenimi učenci (1999).

Razvoj športnih talentov se v svetu večinoma proučuje s pomočjo presečnih modelov in longitudinalnih retrospektivnih zaznavanj športnikov (Davids, 2000; Côté, Ericsson in Law, 2009). Triangulacija virov podatkov, ki jih dobijo šole, ponuja dragocene možnosti za ocenjevanje zanesljivosti pridobljenih podatkov o otroku. V poskusu, da bi naredili korak naprej, so v nedavnih študijah (Ford, Yates in Williams, 2010; Low idr., 2013) izvedli sistematična opazovanja in preučevanje praktičnih dejavnosti, ki zagotavljajo podrobno opredelitev športnega udejstvovanja športnih talentov (ki ne temeljijo na subjektivni interpretaciji) in podrobnejši vpogled na aktivno participacijo športnih talentov s strani pomembnih drugih (npr. trenerjev, športnih pedagogov). Omeniti je treba tudi longitudinalne študije, ki omogočajo raziskovalcem, da zberejo resnične in natančnejše podatke o razvojnem procesu, in sicer v nasprotju s subjektivnimi zaznavami dogodkov, ki jih pogosto opazimo v presečnih študijah. V zadnjih letih so se tako razvili številni programi, pri katerih identifikacija oziroma selekcijski postopek temelji na znanstvenih dognanjih ter na številnih testih različnih sposobnosti (tehnične, taktične spretnosti) in lastnosti (antropometričnih, gibalnih, fizioloških, biokemijskih, psiholoških). Tovrsten način selekcije se imenuje načrtna ali znanstvena metoda (Škof in Bratina, 2016), ki temelji na identifikaciji in izboru športnih talentov s pomočjo testov različnih sposobnostih, značilnosti ter lastnosti učenca.

Kot pripomoček vsem vključenim pri spremljanju razvoja športnih talentov je bil v našem sistemu za posamezne športne discipline razvit računalniško podprt sistem »Talent – ekspertni sistem za usmerjanje otrok ter mladine v športne discipline« (Bohanec idr., 1997; Škof in Bratina, 2016). V zadnjih nekaj desetletjih se je povečalo tudi število drugih teoretičnih modelov, namenjenih razumevanju razvoja športnega talenta, recimo Model razvoja talentov v športu (Bloom, 1985; Gagné, 2000; Côté, 1999; Abbott in Collins, 2004); model FTEM (ang. Fundations, Talent, Elite, Mastery); Model DMSP – The Development Model of Sport Participation (Côté, Baker in Abernethy, 2007); model YPD (ang. Youth Physical Develompment) idr. Številni strokovnjaki sicer zagovarjajo zgodnje odkrivanje športnih talentov, vendar sosledno opozarjajo na prezgodnji postopek odkrivanja, saj s tem tvegamo večjo možnost napak zaradi hitrega in nepredvidljivega razvoja pri mlajših otrocih.

Bibliografska raziskava

Metode pregleda literature

Postopek zbiranja in analize podatkov je sledil smernicam sistematičnih pregledov, ki so bili predhodno razviti v okviru raziskovalnega področja psihologije športa. Da bi dosegli cilje študije in zagotovili znanstveno kakovost pregledanih del, so bili ustrezno izbrani in pregledani strokovni članki v sistemu COBISS (ang. Co-operative Online Bibliographic System & Services; slov. Kooperativni online bibliografski sistem in servisi), ki je slovenski knjižnični informacijski sistem, v katerem število bibliografskih zapisov v vzajemni bazi podatkov presega 4 500 000. Uporabljen raziskovalni pristop pregleda literature in iskalna strategija literature Vse zbirke podatkov so bile iskane s kombinacijo naslednjih ključnih besed: »nadarjenost«, »nadarjen«, »talentiranost«, »talent«, »šport«, »športnik«, »gibalno področje«. Pregled se je zaključil junija 2019. Pregledali smo vse povzetke in njihovo ustreznost v smislu doseganja zahtevanih kriterijev analize gradiva. Obseg terminov je privedel do zaključnih del v več znanstvenih in strokovnih področjih, zato smo iskanje omejili na »šport« in »športnik« ter »nadarjen-ost« in »talent-iranost«.

Strategija pregleda zadetkov

V izbranih publikacijah smo skenirali tudi referenčne sezname, da bi našli nadaljnje relevantne prispevke. Merila za vključitev študije v ta pregled so bila naslednja: (1) prispevek se je moral osrediniti na razvoj športnikov, razvoj športnih talentov, učne dejavnosti ali razvojne modele športnikov, (2) prispevek je moral biti napisan v

slovenskem jeziku in (3) prispevek je moral biti javno objavljen. Omejitev glede zasnove študije ali leta objave nismo zastavili. Ob upoštevanju meril vključevanja smo našli 2019 prispevkov, objavljenih v znanstvenih in strokovnih revijah, zaključnih del (diplomskih, magistrskih in doktorskih nalog) ter prispevkov v zbornikih in na simpozijih, konferencah. Pregledali smo naslove, izvlečke in celotna besedila vseh študij, ki so bile identificirane s strategijo iskanja.

Rezultati

Končen izbor je obsegal skupno 159 prispevkov, od tega: strokovne ali znanstvene članke, e-članke, knjige in uporabniške priročnike od leta 1982 do leta 2018. Podatke smo vnesli v diagram. Rezultati pregleda vključujejo število dobljenih zadetkov, število pregledanih raziskav in število izbranih zadetkov (tabelarični prikaz).

Tabela 1: Rezultati pregleda literature

	Ključne besede	Število vseh zadetkov	Izbrani zadetki za pregled v polnem besedilu	Ustrezna terminologija
COBISS	Nadarjenost šport Nadarjeni šport(nik) Talentiranost šport Talentirani šport(nik) Nadarjenost in talentiranost/nadarjen in talentiran šport(nik)	59 71 3 7 1	43 55 2 6 1	5* 2* Skupaj n = 5* (oba termina)
	Ključne besede	Število vseh zadetkov (ključnih besed) / število vseh prispevkov	Izbrani zadetki za pregled v polnem besedilu	Ustrezna terminologija
Google Scholar in **ProQuest**	Nadarjenost šport Nadarjen šport(nik) Talentiranost šport Talentiran šport(nik) Nadarjenost in talentiranost/nadarjen in talentiran šport(nik)	2310/1000 2310/1000 973/940 878/670	69 69 28 28	5* 8* Skupaj = 5* (oba termina)

* V bazah podatkov se nekatera dela podvajajo, zato smo to upoštevali pri prikazu rezultatov in razpravi.
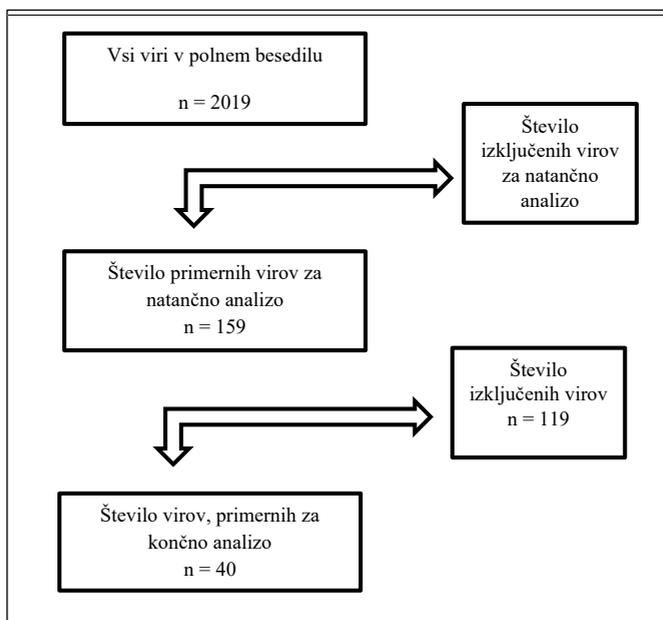
Slika 1: Rezultati pregleda literature so podani v diagramu PRIZMA (ang. Preferred Reporting Items for Systematic Reviews and Meta-Analyses).

Teoretično ozadje pri raziskovanju razvoja športnih talentov in ustrezna raba terminologije

Ugotovili smo, (i) da obstajajo večje vrzeli pri opredeljevanju terminov, ki se nanašajo na nadarjene in talentirane učence na področju športa (kot npr. nadarjeni za nogomet, rokomet, hokej; atletsko nadarjeni; gibalno nadarjeni; motorično nadarjeni; (ii) v slovenskem prostoru nimamo enotnega konceptualnega modela oziroma ustreznih terminoloških izhodišč, ki bi empirično podprto prikazale razliko med nadarjenostjo in talentiranostjo na športnem področju; (iii) obstajajo tehnične in strokovne pomanjkljivosti pri prepoznavanju (evidentiranju in identifikaciji) in nadaljnji pedagoško-psihološki obravnavi nadarjenih in talentiranih učencev. Analiza izbranega znanstvenega in strokovnega gradiva kaže, da je med 2019 prispevki bilo ustreznih sprva le 159. Z analizo vsebine smo za namene študije predstavili tako le najbolj relevantne prispevke. Končni izbor je obsegal skupno 40 prispevkov, od tega: strokovne ali znanstvene članke, e-članke, knjige in uporabniške priročnike od leta 1982 do leta 2018.

Avtorji, ki so v svojih delih obravnavali področje nadarjenosti in talentiranosti pri športu, so naslednji (po abecednem vrstnem redu): *Ažman - Juvan, K., Bačanac, L., Bednarik, J., Belna, D., Bon, M., Breg, K., Čanžek, M., Černe, M., Čeleš, D., Černila, G.,*

Čoh, M., Emberšič, D. S., Epstein, D., Filipčič, A., Filipčič, T., Hadžić, V., Jošt, B., Jošt. P., Jug, U., Jurak, G., Kapus, V., Kovač, M., Kovačič, S., Kožar, J., Kristan, S., Leskošek, B., Majerič, M., Makuc, N., Malovič, J., Matejek, Č., Muha, V., Muhič, M., Pavšič, M., Planinšec, J., Pori, P., Prah, A., Pušnik, V., Rajtmajer, D., Reisman, M., Rotovnik-Kozjek, N., Rode, N., Rogelj, N., Rus, N., Starc, G., Trep, T., Strel, J., Šafarič, N., Šibila, M., Škof, B., Štemberger, V., Šturm, J., Tancig, S., Tušak, M., Ulaga, M., Verbošt, G., Vidmar Kuret, M., Vizjak, Žvan, M., Vizjak Pavšič, M., Vodičar, J., Zupet, P., Zurc, J., Železnik, L.

Ugotavljamo, da je ustrezna konceptualizacija nadarjenosti in specifične nadarjenosti oziroma talentiranosti na športnem področju oblikovana in strokovno ustrezno predstavljena v **15** strokovnih in znanstvenih delih, s strani nekaterih pomembnejših avtorjev (*Bon, 2008*; *Bon idr., 2018*; *Čoh, 2014, 2017*; *Čoh in Žvan, 2016*; *Epstein, 2015*; *Jošt idr., 2012*; *Kapus, 1989; Prah, 1992*; *Pušnik, 2005*; *Reisman, 2017*; *Rode, 2018*; *Škof, 2017, Vidmar Kuret, 2005*; *Zurc, 2018*). Opažen je trend ustrezne uporabe terminov na področju odkrivanja in dela s športnimi talenti predvsem pri študentih Fakultete za šport Univerze v Ljubljani, ki v primerjavi s kolegi drugih fakultet (predvsem pedagoških) dosledno in strokovno utemeljeno ločijo termina nadarjenost in talentiranost v obravnavi specifičnih talentov na gibalnem/športnem področju. Drugi avtorji uporabljajo termin nadarjenost (nadarjeni), nekateri ju celo mešajo in dosledno v besedilu navajajo oba. Obenem ugotavljamo, da je ustrezna in poglobljena predstavitev sistematično predstavljena le pri dveh avtorjih (Čoh, 2014, 2017; Škof, 2017).

Razprava

Vrzeli v zakonodajnih in programskih izhodiščih s področja razvoja športnih talentov v Republiki Sloveniji

Izhodišča, ki opredeljujejo delo z nadarjenimi in talentiranimi učenci v slovenskem osnovnošolskem izobraževalnem sistemu, so naslednja: (1) Koncept: odkrivanje in delo z nadarjenimi učenci v devetletni osnovni šoli (1999); (2) Bela knjiga o vzgoji in izobraževanju v Republiki Sloveniji (Krek in Metljak, 2011); (3) Zakon o osnovni šoli (ZOsn, 2013).

ZOsn (2013) določa, da so nadarjeni učenci tisti, ki izkazujejo visoko nadpovprečne sposobnosti mišljenja ali izjemne dosežke na posameznih učnih področjih, in sicer v umetnosti ali športu. V Konceptu OŠ (Žagar idr., 1999) je zapisano, da so, v skladu z ameriško opredelitvijo, zapisano v njihovem zakonu o izobraževanju nadarjenih iz leta 1978, nadarjeni ali talentirani tisti otroci in mladostniki, ki so bodisi na predšolski stopnji, v osnovni ali srednji šoli, pokazali visoke dosežke ali potenciale na intelektualnem, ustvarjalnem, specifično akademskem, vodstvenem ali umetniškem področju in ki poleg rednega šolskega programa potrebujejo posebej prilagojene programe in aktivnosti. Torej med nadarjene ali talentirane štejemo tako tiste z dejanskimi visokimi dosežki, kot tudi tiste s potencialnimi zmožnostmi za take dosežke, in sicer na naslednjih področjih: splošna intelektualna sposobnost, specifična akademska (šolska) zmožnost, kreativno ali produktivno mišljenje, sposobnost vodenja, sposobnost za vizualne in tako imenovane izvajalske umetnosti. Pomemben dodatek, ki ga v Konceptu za OŠ ne najdemo, je pa opredeljen v Konceptu za SŠ, pojasnjuje: »Psihomotorične sposobnosti v zadnji ameriški definiciji iz leta 1988 sicer niso posebej izpostavljene, ker da so psihomotorični talenti umetnostne narave, kot je, recimo, ples, zaobseženi v sposobnosti za izvajalske umetnosti, in ker naj bi bilo za nadarjene športnike v šolah v ZDA zadovoljivo poskrbljeno. Za naše razmere pa velja, da psihomotorično področje ostaja posebno področje nadarjenosti« (Žagar idr., 2007, str. 3). Definicija torej ni ustrezno operacionalizirana na področju osnovnošolskega izobraževanja, prav tako se v interpretaciji te pojavljajo nekatere nejasnosti oziroma nevralgične točke, kot npr. »[...] definicija v obstoječem Konceptu (1999) ne govori samo o visoki splošni intelektualni sposobnosti, ampak tudi o talentih na specifičnih akademskih področjih, v umetnosti, ustvarjalnosti in na področju vodenja …, za visoko specifične sposobnosti, ki vodijo do uspeha na posebnih področjih, se uporablja termin »talentiranost« in ne »nadarjenost«. Govorimo torej o splošno nadarjenih in specifično nadarjenih ali talentiranih. Glede na zgornji zapis lahko definicija v nadaljevanju privede do nejasnosti in nepravilne strokovne uporabe, kar se jasno odraža v analizi strokovnih in znanstvenih prispevkov.

Podobno je opaziti tudi v Učnem načrtu za športno vzgojo v osnovni šoli (2011), ki v splošnih izhodiščih navaja, da se »posebno skrb nameni nadarjenim za šport« ter »omogoči programe za nadarjene učence«. Zapisane so tudi nekatere specifike učno diferenciranega in individualiziranega dela z učenci (glede na zmožnosti in druge posebnosti učencev) v fazah načrtovanja, organizacije, izvedbe ter pri preverjanju in

ocenjevanju znanja. Učitelju načrtno spremljanje in povratna informacija o zbranih podatkih napredka učenca ter opazovanje in analiziranje dela omogočajo, da ustrezno načrtuje športni proces, prilagodi pouk posamezniku, mu svetuje za izboljšanje njegovih dosežkov oziroma za odpravljanje pomanjkljivosti in vključevanje v različne dejavnosti izven šole (Učni načrt, 2011). V Učnem načrtu (2011, str. 52) je posebej izpostavljen tudi status športnika, saj naj bi »[...] šola nadarjenim športnikom nudila ustrezno pomoč, tako da jim prilagodi obveznosti vzgojno-izobraževalnega programa skladno z veljavno zakonodajo«. Ponovno prihaja do kontradiktornosti v terminološkem zapisu, saj ne vemo, ali gre za splošno nadarjenega ali specifično nadarjenega učenca, talenta na področju športa.

Zaključek

Odkrivanje in usmerjanje za šport talentiranih posameznikov in njihovo pravočasno vključevanje v proces treniranja tiste športne panoge, ki najbolj ustreza njegovim sposobnostim, je eden najzahtevnejših postopkov, s katerim se ukvarja sodobna športna znanost. Problemi izbora in usmerjanja v športu so zelo specifični, povezani s številnimi sposobnostmi in značilnostmi, ki določajo športni rezultat. Genetski material, morfološke značilnosti, osnovne in specifične gibalne sposobnosti, ustrezne psihološke in motivacijske značilnosti ter ugodno družinsko in širše socialno okolje nedvomno omogočajo uspešnost športnika v izbrani športni panogi (Čoh, 2017, str. 27). S kritičnim pregledom nekaterih (predvsem tujih) raziskav (npr. Abbott in Collins, 2004; Baker, Cobley in Schorer, 2012; Côté, 1999; Piirto, 2007; Vaeyens, Leonir, Williams in Philippaerts, 2008) v razvoju športnih talentov smo podrobneje opredelili pomembne terminološke vrzeli v strokovni literaturi in poudarili konstruktivne vpoglede na prihodnje raziskave s področja nadarjenosti in talentiranosti.

S kritičnim pregledom nekaterih slovenskih strokovnih izhodišč smo ugotovili, da: (i) obstajajo večje terminološke vrzeli pri opredeljevanju terminov, ki se nanašajo na nadarjene in talentirane učence na področju športa, ter da (ii) v slovenskem vzgojno-izobraževalnem prostoru (še) nimamo enotnega konceptualnega/kurikularnega modela na področju opredelitve, identifikacije in dela s talentiranimi učenci na športnem področju. Zgodnja diverzifikacija lahko vodi tudi k uspešnosti športnega talenta in zagotavlja pomembne koristi za nadaljnjo športno udeležbo in kognitivni ter osebni razvoj posameznika. Da bi lahko ocenili karakterizacijo mikrostrukture

izjemnih dejavnosti športnega talenta, morajo biti retrospektivna poročila mladih športnikov opredeljena predvsem z vidika sistematičnega opazovanja športnih aktivnosti. V prihodnjih študijah bo treba konceptualno operacionalizirati tudi skupna merila, ki se uporabljajo za določitev (evidentiranje in identifikacijo) športnega talenta ter v preiskave, povezane s preučevanjem kulturnega ozadja in socialno-ekonomskega ozadja športnih talentov.

Summary

Talent can be general or specific. For high general ability to achieve outstanding results in several fields at the same time, we use the term "giftedness" and for highly specific skills that lead to success in specific fields, we use the term "talent" (Bates, Munday, 2005; Bezić et al., 1998; Gagné 1985; 1991; 2003; 2005). If (i) high general intelligence, (ii) creativity, and (iii) personal characteristics (Renzulli, 2016) are required to demonstrate giftedness in the general field, this is not entirely the case when we are talking about talent. What is needed is not so much the cognitive component, but most of all (i) mental and physical predispositions; (ii) environmental impact (family, school and the wider society); and (iii) self-motivation of the individual. Baker (2003) defines talent in sport on the basis of four sets of indicators: (i) anthropometric predictors, (ii) physiological-movement predictors, (iii) psychological predictors and (iv) sociological predictors. We are talking about a talented individual in the sports field, when he/she reaches the motor, psychomotor or sensorimotor skills of the top 10% in the reference group and is distinguished primarily by precision, sensitivity, movement skills and abilities (coordination, balance, strength and endurance), accuracy of observation, hearing, sense of movement, etc. (Vaeyens et al., 2008). Petkova and Grebennikova (2016) state that it is very important for sport talent to have the following: 1) exceptional responsiveness and strength, which is reflected in the individual's speed; 2) efficiency, which is referred to as endurance, or ability to resist fatigue; and 3) coordination of movements manifested as agility. This means that an individual who has a specific talent in the field of mobility has these mobility skills that are very well developed and can use them appropriately to achieve top sporting results. Bishop (2010) also emphasizes the importance of the hereditary conception and personality traits of the individual, which are also integral to Renzulli's three-circle model of giftedness (Renzulli, 2016). In identification (the nomination phase) or diagnosing exceptional achievement in the psychomotor and sensorimotor fields, evidence of

outstanding achievement is considered (Koncept, 1999), e.g., (i) sports competitions in different fields (participation and good results in regional and national competitions); and (ii) outstanding achievement in the field of mobility. Unfortunately, Koncept (1999) does not specify what outstanding achievements are, thus allowing for a possible subjective interpretation by a teacher who nominates or identifies a student as specifically talented in sport. Teachers can give the most credible assessment of a student's movement skills by using (1) a sports card (Štemberger and Filipčič, 2014) and (2) an OLNADO7 rating scale (Concept, 1999). The identification of talent and the recruitment of young people into sport represent the beginning of the selection process - one of the most prominent features of competitive sport, which runs through the athlete's entire path (Škof and Bačanac, 2007).

Bibliographical research with results

The final selection consisted of a total of 159 entries, which included professional or scientific articles, e-articles, books and user manuals from 1982 to 2018. We established the following: (i) that there were significant terminological gaps in the definition of the terms gifted and talented in sport (such as talented footballer, handballer, hockey player; athletically gifted; motor-talented; (ii) that in Slovenia there is no uniform conceptual model or relevant terminological basis for empirically supporting the difference between the two; and (iii) that there are technical and professional weaknesses in the identification and further pedagogical and psychological treatment of gifted and talented students. We find that the relevant conceptualization of talent, specific talent or talent in the sports field is designed and professionally presented in 15 professional and scientific works by some of the most important authors (Bon, 2008; Bon et al., 2018; Čoh, 2014, 2017 ; Choch and Zhvan, 2016; Epstein, 2015; Jost et al., 2012; Kapus, 1989; Prah, 1992; Pusnik, 2005; Reisman, 2017; Rode, 2018; Bishop, 2017; Vidmar Kuret, 2005; Zurc, 2018). Other authors use the terms gifted, or talented, and some even add confusion by consistently listing the two terms in the text. At the same time, we find that a relevant and in-depth presentation is systematically presented by only two authors (Čoh, 2014, 2017; Bishop, 2017).

By critically reviewing some research studies (especially foreign ones; e.g., Abbott and Collins, 2004; Baker, Cobley, & Schorer, 2012; Côté, 1999; Piirto, 2007; Vaeyens, Leonir, Williams, & Philippaerts, 2008) in the development of sports talent, we have identified significant terminological gaps in the professional literature and highlighted constructive insight into future research in the field of giftedness and talent. A critical review of some of Slovenia's professional background has revealed that (i) there are major terminological gaps in the definition of terms referring to gifted and talented students in the field of sport and (ii) in the Slovenian educational space, we lack a single conceptual / curricular model for defining, identifying and working with talented students in the field of sport.

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Piano Teachers' Job Satisfaction in Music Schools in the Republic of Croatia

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Abstract/Izvleček This is the first major research targeting a specific group of teachers, shaped with the idea of gathering empirical indicators of piano teachers' job satisfaction. More than half of music schools' piano teachers participated (N=253) from all the counties of the Republic of Croatia. The results have shown that piano teachers are moderately satisfied, that there are no differences when it comes to gender, nor with the type of school where they teach. Teachers with more years of experience are more satisfied with their work, similar to teachers who have advanced in their professional area. The results can contribute to improving teaching practice and effectiveness, with the further outcome being pupils achieving higher educational attainments.

Zadovoljstvo učiteljev klavirja v Republiki Hrvaški pri delu Prispevek prinaša rezultate prve velike raziskave, katere cilj je bila specifična skupina učiteljev, izvedene z namenom zbiranja empiričnih pokazateljev zadovoljstva učiteljev klavirja pri delu. Sodelovala je več kot polovica (N = 253) učiteljev klavirja v glasbenih šolah iz vseh županij Republike Hrvaške. Rezultati so pokazali, da so učitelji klavirja zmerno zadovoljni, da ni razlik glede na spol in tip šole, v kateri poučujejo. Prav tako kot učitelji, ki so napredovali na svojem strokovnem področju, so bolj zadovoljni tudi učitelji z več leti delovne dobe. Rezultati lahko prispevajo k izboljšanju prakse poučevanja in k večji učinkovitosti pri doseganju rezultatov, to so učenci z višjimi učnimi dosežki.

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Introduction

Elementary and middle music schools in the Republic of Croatia are mostly part of the public educational system, and only a small number belongs to the private sector. The classes in music schools include one-to-one instrument lessons and group classes, which are those in theoretical music subjects (MZOS and HDGPP, 2008; MZOS and HDGPP, 2006). Instrument lessons are organized and conducted by music instructors who are instrumentalists, teachers who have acquired their education at academies, higher education institutions for educating professional musicians. Their activity is conducted in a specific educational context, in one-to-one teaching, which is the best type of teaching and learning (Zlatar, 2015; Carey, 2008 via Carey and Grant, 2014; Davidson and Jordan, 2007; Rojko, 1996; Rojko, 1987). In one-to-one teaching, the teacher and the pupil communicate directly, and the teacher's knowledge, skills and attitudes are directed to teaching a single pupil in one class lesson. This way of organizing lessons in instrument playing is rooted in the music-pedagogical tradition from the earliest times of organized lessons in instrument playing, and it is present in formal and informal, institutionalised and non-institutionalised teaching and instrument playing lessons, at all educational levels, across the world, and equally in Croatia's music schools, and some other European countries (Kavčič Pucihar and Rotar Pance, 2017; Creech and Gaunt, 2012; Parkes and Wexler, 2012; Gaunt, 2011; Chmurzynska, 2009; Davidson and Jordan, 2007; Schmidt, 1992). One-to-one teaching, specifically in instrument playing, involves a pedagogical space for teacher action in which the teacher's role is extremely important because multiple studies (e.g. Davidson, Moore, Sloboda, Howe, 1998; Manturzewska, 1990; Mackworth-Young, 1990; Sosniak, 1985) have shown that the teacher's personality, expertise and the way they shape the class and teach, are factors that directly influence pupil achievement. Types of research on processes in one-to-one instrument teaching have shown that the teacher and the pupil enter a special pedagogical relationship; teachers, regardless of the educational level, operate through a special emotional relationship with their pupils, and their influence on the pupils is extremely strong and important (Nerland and Hanken, 2002 via Burwell, Carey and Bennett, 2017; Creech and Gaunt, 2012; Gaunt, 2011). Other than that, the teacher and the pupil are in an isolated space, called the "black box" in the literature or, more poetically, the "secret garden", because no other pupils are present in the class, and it is a challenge to determine what happens during the teaching process (Chmurzynska, 2012; Hyry-Beihammer, 2010; Hanken, 2008;

Young, Burwell and Pickup, 2003; Rostvall and West, 2003). All this points to the fact that the feelings teachers bring to lessons with their pupils in one-to-one teaching are crucial because their job satisfaction or dissatisfaction may be reflected in their teaching, and even their commitment to work, because Koludrović and Reić Ercegovac (2008 via Koludrović, Jukić and Reić Ercegovac 2009, p. 237) point out that "the key factor in commitment to work is job satisfaction since it influences the teacher's motivation to work and for personal engagement in school." This implies that teachers who are dissatisfied with their work are unable to fully commit to their work, which has repercussions regarding their teaching, relationships with pupils and the class atmosphere (Koludrović et al., 2009). It is important to establish what has an impact on the increase in satisfaction with pedagogical work because this could allow us to keep quality teachers in the education system (Coolahan and Murphy, 2003 via Morgan and O'Leary, 2004). Music teachers play a central role in creating a learning environment, especially when their pupils see them as models to whom they look up (Campbell, 1991 via Figueiredo, 2019). It can be concluded that when it comes to piano teachers, job satisfaction exerts an impact not only on the atmosphere in instrument lessons, but also on the education outcomes for pupils and their attitude towards music. In conclusion, researching how teachers feel at their work yields important data that could ultimately contribute to the quality of their teaching and to improved pupil educational achievement (Zembylas and Papanastasiou, 2004 via Gkolia, Belias and Koustelio, 2014).

Job Satisfaction Theories

Job satisfaction can be observed from two angles: as an individual category of each working person, or as a category bound to a certain group of persons who perform the same job or a similar type of work, which will be marked as a summative estimate attitude of a group of workers at a certain job. When observed as a single category, job satisfaction is an experience of each individual, and tied to the individual's attitudes, which combine psychological, physical, and environmental assumptions about feeling good at work. The concept was introduced into the scientific discourse by Hoppock in 1935 (Hoppock, 1935 via Shukla, 2014). In 1959 F. Herzberg was the first to study the factors of job satisfaction and dissatisfaction (Herzberg, Mausner and Snyderman, 1959; Novak, Laušić, and Jandrić Nišević, 2008) and to introduce the two-factor theory of job satisfaction (Herzberg et al., 1959) which represents the thesis of two sets of factors influencing the feeling of being satisfied

by one's job: motivational and hygienic. The motivational factors of job satisfaction are intrinsic motivators and are tied to "achievements, respect, job independence, responsibility, success (advancement), personal growth" (Herzberg, 1959 via Novak et al., 2008, p. 110). These intrinsic motivators are tied to job content (Brnad, Stilin and Tomljenović, 2016), and they affect the feeling of satisfaction among workers. The hygienic factors are extrinsic motivators: management policy regulating policy and administration, surveillance, relationships, working conditions, pay, status and safety; these prevent dissatisfaction, but they do not stimulate worker engagement (Brnad et al., 2016). The Job Characteristic Model by Hackman and Oldham (1974 via Alini Mat Ali et al., 2014) is the second theoretical postulate behind job satisfaction, and it includes five elements that influence job satisfaction: 1. possession of various skills; 2. traits of the work task; 3. significance of the work task; 4. possession of autonomy when doing a job, and 5. getting feedback. Those elements influence how a person feels, but they also influence the outcomes and results of performing a job, which involves feelings of job satisfaction and motivation, or conversely, if there is a lack of satisfaction, it can even result in quitting the job. The third, dispositional theory of job satisfaction, introduced by Judge et al. (1998), explains how job satisfaction is influenced by an individual's disposition. The individual's dispositions, such as self-respect, general self-efficiency, control locus and neuroticism, and their presence in every individual, have an impact on the feeling of job satisfaction (Judge et al., 1998). Judge et al. (1998) begin from the assumption that all humans have innate traits, personal dispositions that are seen through expression of self-respect evaluations, general self-efficiency, locus control and neuroticism, and which influence their feeling of job and life satisfaction, i.e., a person will perceive their job based on how they feel (Bryant III, 2012). Some studies have suggested that higher levels of self-respect and self-efficiency lead to higher levels of job satisfaction, and lower levels of neuroticism are key in experiencing a higher level of job satisfaction. Thus, job satisfaction, according to this theory, is in symbiosis with the person's physical state. By defining the person's disposition, managers, and in the case of teachers, principals or senior staff in the school's management structure, could react and implement changes in the working environment to better satisfy certain types of dispositions and thus create workplace conditions more suitable for achieving each worker's satisfaction. Moreover, satisfaction depends on the characteristics of a certain job. Since job satisfaction is important in all types of work, the same applies to teachers' jobs at all levels of

education, and especially teachers who work as instrument teachers in music schools in one-to-one teaching.

Teachers, especially those teaching instrument playing, are models for their pupils, and their job satisfaction and methods of class performance are very important. When it comes to general education teachers, it has been established that satisfaction and class performance are in direct connection (Chamundeswari, 2013), which is also applicable to teachers in music schools.

Research on Teacher Job Satisfaction

The importance of job satisfaction is backed up by the finding that by 2000, around 5000 research studies dealing with this theme had been conducted (Spinelli and Canavos, 2000 via Perkmen, Cevik and Alkan, 2012). In numerous types of research and in "various science disciplines" (Gkolia et al., 2014, p. 110), the phenomenon of job satisfaction has been studied. Various studies regarding differences between classroom teachers and subject teachers, teachers of different schools or professors at higher education institutions, have been conducted in Croatia in various contexts which cause job satisfaction or dissatisfaction. Jurčec and Rijavec (2015) have questioned the differences between classroom and subject teachers at general education schools regarding life satisfaction, positive and negative emotions, and emotional exhaustion. Classroom teachers are more satisfied with their life and work, and less emotionally exhausted; they are more focused on their job as a calling or a career, and not as a source of income, unlike subject teachers. These conclusions were confirmed in the study by Miklec (2010 via Jurčec and Rijavec, 2015), which showed that classroom teachers are more satisfied with their job compared to subject teachers. Vidić (2009) studied the distribution of job satisfaction among classroom and subject teachers by a series of parameters: pay, co-workers, the principal, advancement, the job itself and overall satisfaction. Classroom teachers are in general more satisfied with their jobs in all parameters, and the author explained the results with the fact that subject teachers can also do other jobs, while classroom teachers know that by having chosen the college they attended, they would be working exclusively in class teaching; thus, they do not face possible uncertainty when it comes to changing jobs. Radeka and Sorić (2006) interviewed elementary and high school teachers in Zadar County (N=462) and established that teachers claim satisfaction with their job and self-competence; a rise in job satisfaction along

with improved estimates of working conditions has also been noted, as well as living standards, the teacher's job reputation and their qualifications for doing the job. A third of the teachers interviewed have thought about leaving their job; these pointed out dissatisfaction with low living standards, low social reputation, and poor professional qualifications Pavin (2005) researched differences in job satisfaction among teachers in grammar schools and vocational schools (N=1044). The satisfaction factors in this study included communication and direct work with pupils, pupil progress, the sense of the teacher's being involved in the pupil's development, pupil activity in class, as well as the job characteristics: communication with colleagues and parents, creativity, and dynamism in the job. Dissatisfaction is caused by the material state of the school, out-of-date teaching aids, poor building infrastructure in the workplace, outdated curriculums, programs and teaching methods, large classes, pupil's material status and the position of the teaching profession in society, as well as the way the principal and administration treat them. Moreover, dissatisfaction is stimulated by professional specialization and advancement, monitoring and grading pupils, and the pupils' level of class motivation. Vocational school teachers point out lack of discipline, motivation, and disrespect for the teachers as sources of dissatisfaction, which is different from grammar school teachers, who expressed dissatisfaction with the lack of subject choice which would lead to various program orientations of grammar school pupils. Pavin, Rijavec and Miljević-Riđički (2005) interviewed classroom teachers (N=1334) and subject teachers (N=2134) in 121 schools. They established that the greatest source of satisfaction is working, communicating and cooperating with pupils, but also colleagues, the cognitive progress of their pupils, a sense of class enjoyment among pupils and their active participation, a sense that they mediate their knowledge to pupils, and the pupil's good achievements which are the result of their teaching. Also, an important source of satisfaction is the feeling of vocation value and witnessing pupils' satisfaction and happiness. The causes of dissatisfaction pertain to the schools' material state, the status of the teaching profession in society and, from a materialistic point of view, the extensive administrative part of the job, overly extended curriculum and programs requiring that teaching time should be used for everything to be carried out and marked. Žužić and Miljković Krečar (2014) researched the factors in job pleasure among higher education teachers (N=69) according to their place of employment: public or private. Satisfaction is found by all in how interesting the job is, its dynamics, creativity, a feeling of accomplishment and autonomy; however, not being involved in the decision process is for both

groups a predictor of dissatisfaction, as well as the least important job predictor, while dissatisfaction is associated with income. The interviewed teachers place a different value only on the satisfaction that comes from relationships with professional associates because the teachers from private schools are happier with these. When variables such as age, work experience and gender were introduced into the study, it was established that in both groups, female teachers were more satisfied with their pay, older teachers were more satisfied with their working conditions, and teachers with more work experience found how interesting their job was to be the most important predictor of satisfaction. All teachers find working conditions important, but teachers from public higher education institutions are more satisfied with them. Pernjek and Matić (2015) researched job satisfaction and dissatisfaction factors among teachers of German Language in Croatia, and concluded that the dissatisfaction factors are time and psychological load, the way the schooling system has been developed, the influence of the job on one's health, protection from job loss, promotion opportunities, pay and reputation in society. The satisfaction factors are working with children, relationships with pupils, success in a given class, success in educational tasks, long holidays, chances for self-realization, colleague cooperation and support, and the greatest satisfaction (90%) is working with children. In Slovenia, Kapun, Kešina and Čagran (2009) questioned teachers from nine-year elementary schools (N=104) about job satisfaction according to four factors: material (working conditions, pay, job safety), personal (promotion opportunities, professional development, freedom, independence), social (being informed about school activities, relationships with colleagues and superiors), autonomy, and job creativity (permanence, reputation and job creativity, psychological and physical job complexity). They concluded that there were no differences in job satisfaction when it comes to the age of the pupils being taught, and teachers with more work experience found greater satisfaction in autonomous-creative and material factors. Teachers who have shortened work hours are also more satisfied, and they are also more satisfied with individual development and autonomous-creative work. Of the teachers with a permanent job, the ones with more work experience are more satisfied than their younger colleagues. Numerous global studies have questioned the connection between teachers' competence and their feeling of job satisfaction because the teachers' competence is also an important predictor of achieving job satisfaction. Arifin (2015) concluded, among high school teachers (N=117) in the Indonesian city of Jayapura, that competence is positively,

but not significantly, tied to job satisfaction. Contrary to that, Devi (2007 via Arifin, 2015), Labbai (2008 via Arifin, 2015) and Waluyo (2013 via Arifin, 2015) have pointed out in their research that the development of human potential by improving skills has a significant positive effect on job satisfaction. Akram et al. (2015) researched the connection between job satisfaction, teacher competence and commitment to work in Pakistan on a sample of 1100 high school teachers from 120 schools, and established that job satisfaction is positive and significantly connected to the feeling of competence, and the same was established by Selvam (2012 via Akram et al. 2015) and Naseema (1994 via Akram et al. 2015), and Gupta and Mir (2013 via Akram et al. 2015). In a study conducted by Shukla (2014), it was determined that there was a slight, but not significant connection between job satisfaction and teacher competence, a very low, positive connection between job devotion and teacher competence, and there was no greater difference between the level of teacher competence with high and average job satisfaction in India among teachers of elementary education. Teachers who are satisfied with their job are also more committed to it. Different results can be found in a study by Singh and Kumar (2013), where a connection between job satisfaction and feeling of competence was established with teachers of higher education institutions in India; healthy and positive, supportive surroundings, manifested through successful teaching, are equally important to teachers of both genders, from both rural and urban parts of the country, but also among differently qualified teachers. Chamundeswari (2013) discovered that job satisfaction and class performance were significantly positively tied among high-school teachers in India, although that connection differs depending on the type of high school where the teachers work. As for music teachers, a few research studies have been made so far. Heston et al. (1996 via Bryant III, 2012) researched job satisfaction among orchestra directors (N=120) in the US state of Iowa, and the factors were the following: pupil success, parent support, class, administrative support, pupil participation in events, colleague support, professional development, income, acknowledgement and financial support. The greatest job satisfaction is caused by pupil success, along with administrative and parent support, but these are also the factors that cause the most dissatisfaction. As for stress relief at work, according to the interviewees, the most important factors were spouse and colleague support. In Malaysia, Jamaludin and Mohd Ghazali (2012) studied the factors creating satisfaction or dissatisfaction among music teachers in high school (N=8).

Teachers are satisfied with their job, especially when their pupils learn to play an instrument, when they achieve success at school performances, by the intrinsic motivation they feel when teaching music, with work conditions and pay, but they think they should be additionally paid for the time spent working outside of regular class, when they have rehearsals with ensembles. Teacher dissatisfaction is portrayed through relationships with colleagues and the principal, the amount of administrative work they must do outside of their working hours, and with the perception of music teachers among colleagues. One of the indicators of job satisfaction and dissatisfaction among teachers is quitting the job, and the factors in such a decision are key for teachers' job satisfaction or dissatisfaction. Madsen and Hancock (2002) researched what causes teachers to quit and the exhaustion of teachers who have completed their education at the same university in the last ten years. They conducted the study in 1995 and repeated it in 2001 with the help of two questionnaires: after completion of studies and after six years in the workforce. On a sample of 137 music teachers, they established that the rate for job quitting in American schools in the first six years of teaching is 34%, while in the first ten years of teaching it is 17%. A total of 34.4% of music instructors have given up teaching, i.e. one-third of graduate teachers are not still teaching six years after graduation, but they often remain in the profession (Madsen and Hancock, 2002). On the one hand, the administration, school and parent support are reasons for staying, but teachers who have left their profession point out that they were often influenced by personal reasons, followed by disagreement with the administration. Nevertheless, some of the teachers who no longer teach in schools have remained in music in other capacities, as performers, or giving private lessons, playing in military bands or are currently parent educators. In the USA, Russell (2008) interviewed string instrument teachers (N=304) about their job projections after one and five years of working. He researched the factors that can influence career decisions. The interviewees were divided into those remaining in the profession, those who were going to switch schools and those who had quit their jobs. Most of the teachers planned to stay in their positions the following year, but only half of them in the following five years. The working culture, perception of music's importance in curriculums, satisfaction with pupil characteristics, psychological factors and the teachers' socio-economic status are all reasons on which the teachers base their thoughts about staying and developing their careers. In the USA, Hancock (2008) studied the reasons for general education teachers who teach music subjects quitting their jobs (N=1931). In the research, various teacher characteristics, school conditions, efficiency, support, and

pay were analysed. Significant factors in job quitting or change are age (younger than 30 or those between the ages of 30 and 39), working in private and high schools, extracurricular load, the school's care system regarding teachers, administration and parent support pay and pay satisfaction. Women are at higher risk of quitting their jobs than men, and Hancock (2008) lists other types of research as well (e.g. Gissmer and Kirby, 1991; Gritz and Theobald, 1996; Madsen and Hancock, 2002; Theobald 1990) in which the same was concluded, and all for personal reasons, such as being paid less during maternity leave. Moreover, teachers in high schools are at greater risk, as well as those who do additional jobs in private and public schools. In the state of Georgia, Bryant III (2012) conducted research with 139 instrument teachers who were also ensemble and orchestra directors, seeking an answer to the question of which factors lead to high levels of job satisfaction: administrative support, pupil participation and pay. Blackwell (2018) compared teachers in private studios (N=622) and music teachers in general education K-12 schools (N=976) on how developed their job skills were, how necessary these were to their work, and how the development of those skills contributed to job satisfaction. The results showed that teachers find the following issues very important: developing social relationships, management skills, project leading skills, persuasive speech skills, written expression, creative thinking, receiving feedback, extensive knowledge and education and critical thinking. More than 50% of the participants stated that their institutions enabled them to develop project management skills, persuasive speech skills, written expression, and critical thinking skills. Teachers working in their studios are less satisfied with work safety and the balance between work and personal life. In Croatia, Franceschi and Reić Ercegovac (2017) questioned piano teachers (N=69) regarding their job satisfaction. They established the extent to which teachers are satisfied with their jobs; 61% of them estimated their satisfaction with the highest scores, and it was also determined that job satisfaction and success depend on the prizes their pupils had been awarded at competitions, their pupils attending seminars, and that other professional specializations are an additional boost to teachers in their work. Škojo and Sabljar (2016) researched elements of piano teacher job satisfaction, as well. The factors that make these teachers satisfied are competence, establishing a pleasant class atmosphere, class engagement, motivation to work in class, pupil communication, self-creativity in class, achieving teacher authority in class, and participating in professional specializations. Dissatisfaction is projected through the inability to carry out the intended program and wanting program revision.

Sabljar (2019) researched the connection between job satisfaction feelings and estimates of competence development in teachers and concluded that for the feeling of job satisfaction, the most significant factor is the development of psychological competences, followed by the development of pedagogical ones, while the development of musical competences is of marginal significance. Following from this study, another has been carried out and is presented in this paper; this study questions the sense of job satisfaction through variables of gender, years of work experience and the type of school where the teachers work, as well as possession of a professional title.

Methodology

The research aims to establish specifics in piano teacher job satisfaction by considering gender, years of work experience, type of school and professional title. The study was designed with the aim of gathering empirical indicators regarding piano teacher job satisfaction in Croatia's music schools, which could contribute to improvements in teacher practice and thus influence teacher efficiency, with the further aim of achieving higher educational achievement among pupils. Through insight into the summative attitude of job satisfaction feelings, the gathered data will concern piano teachers' job satisfaction. Piano teachers (N=253) working in the music schools of Croatia participated in the research. The sample comprises teachers from all the counties, as well as the City of Zagreb. The sample is representative because the total population of piano teachers in 2012 was 520 and they worked in 93 elementary schools, 28 high schools and in 20 private music schools (Zlatar, 2015). Since the sample in this study is exclusively made up of teachers working in public music schools, the sample amounts to more than 50% of the total number of teachers, so the results can be generalised. There are significantly more women in this sample (N=202; 79.8%) than men (N=39; 15.4%), and some participants (N=12; 4.7%) did not want to define their gender. The variable distribution of the years of work experience (sorted into categories) is up to nine years (N=79; 31.2%), 10-19 years (N=77; 30.4%), more than 20 years (N=92; 35.4%), and some participants (N=5; 2%) did not state their years of experience. According to the type of school, piano teachers either work in music elementary (N= 90; 35.6%) or music high schools (N=161; 63.6%), and two participants (0.8%) did not reply to this question.

It is important to note that music high schools comprise joint elementary and high: i.e., the sample includes teachers who teach only in music elementary and those who teach in both music elementary and music high schools. As for the possession of a title or the lack thereof, the sample includes 190 (75.1%) teachers with no title, 30 (11.9%) mentor teachers, 13 advisor teachers (5.1%) and 20 teachers (7.9%) who stated something else or did not reply.

The Instrument

Along with the demographic gender data, years of work experience, type of school and professional titles, the generalized *Scale of job satisfaction* (Ho and Au, 2006) was also used, which is based on the *Scale of life satisfaction*; it was adapted with statements for piano teachers. The teachers had five statements to estimate: JS 1 – *Being a piano teacher is very close to what I consider ideal;* JS 2 – *The conditions in which I perform the work of a piano teacher are excellent*; JS 3 – *I am satisfied with the job of a piano teacher*; JS 4 – *Until now, I have achieved the important things I want as a piano teacher*; JS 5 – *If I were to choose my career again, I would hardly change a thing*; their estimates of job satisfaction were measured by a scale of seven degrees, from 1 – It doesn't apply to me, to 7 – It fully applies to me.

Research Hypotheses

According to the aims of the research, which were to establish specifics in piano teachers' job satisfaction using variables such as gender, years of work experience, type of school and possession of professional qualifications, the feeling of job satisfaction was problematized by seeking differences and connections between these variables and job satisfaction. Accordingly, the following hypotheses were stipulated in this paper:

H1 There is no statistically significant difference between male and female teachers in job satisfaction.

H2 There is no statistical connection between the teachers' years of work experience and their job satisfaction.

H3 Teachers who work exclusively in music elementary schools are statistically more significantly satisfied with their job than their colleagues working in both music elementary and music high schools.

H4 Teachers who have professional titles are statistically more satisfied with their job than teachers who have no professional titles.

Results and Discussion

Based on the data collected and processed, Table 1 shows the basic values of the job satisfaction variable.

Table 1: *Descriptive values of the composite variable - job satisfaction*

	Range	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis	Mode
JS_1	6	1	7	5.77	1.186	-1.287	1.582	6
JS_2	6	1	7	5.22	1.610	-.919	-.090	6
JS_3	5	2	7	6.14	1.031	-1.559	2.890	7
JS_4	6	1	7	5.23	1.318	-.640	-.044	6
JS_5	6	1	7	5.36	1.542	-.761	-.421	6

Legend:
JS 1 – *Being a piano teacher is very close to what I consider ideal*
JS 2 – *The conditions in which I perform the work of a piano teacher are excellent*
JS 3 – *I am satisfied with the job of a piano teacher*
JS 4 – *Until now, I have achieved the important things I want as a piano teacher*
JS 5 – *If I were to choose my career again, I would hardly change a thing*

As is clear from Table 1, the arithmetic means are slightly high, which indicates moderate job satisfaction (mod. on all variables is 6, while in JS 3, it is 7). The span of replies on all variables is the maximum (except JS 3), which indicates that the variables cover the spectrum of possible replies well – from complete job dissatisfaction to complete satisfaction. All the features are homogenous, since all variables are CV<35% (Coefficient of Variation). According to the raised M (arithmetic mean), the distributions are asymmetrically left, in accordance with the direction of the scale (negative polarization). The variables vary from leptokurtic (JS 1, JS 3) to platykurtic distributions, in accordance with the sampling variability. To test the hypotheses, a composite variable of job satisfaction was constructed (M=5.54; SD=0.92768).

H1, which assumed no statistically significant difference between male and female teachers in job satisfaction, was tested with the nonparametric Mann-Whitney U Test (owing to disproportion in the subsamples being compared). The results of the

test (U=3878.5; p=0.879) confirm the first hypothesis, which assumed that there would be no statistically significant difference between male and female teachers in job satisfaction.

The result shows that male and female teachers are equally satisfied with their jobs. Since the scale is generalized and measures the personal experience of one's job, but not the different factors of satisfaction present in other studies (e.g., Franceschi and Reić Ercegovac, 2017; Škojo and Sabljar, 2016; Bryant III, 2012) and in research conducted with different measuring instruments, it is assumed that the results would be different. Nevertheless, overall, piano teachers of both genders are equally satisfied with their jobs. Testing the second hypothesis, which related job satisfaction to years of work experience in the correlation part of the research scheme, a nonparametric coefficient—Spearman was used, and the results are shown Table 2.

Table 2: *Correlation*

Spearman's Rho	total job satisfaction		experience in years
		Correlation Coefficient	**.254****
		Sig. (2-tailed)	.000
		N	248

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

As is seen in Table 2, there is a statistically low positive connection between teachers' experience and their satisfaction; thus H2, which assumed that there would be no statistical connection between teachers' work experience and their job satisfaction, can be discarded. This implies that, to some extent, teachers' satisfaction grows with years of working in school because those with more years of experience are more satisfied with their jobs. The result is in accordance with Podsen's theoretical postulate on teachers' career phases (Podsen, 2002 via Bryant III, 2012), which explains how the development of the teacher/teacher expertise is divided into four phases according to age and teaching experience: beginner teachers (1-5 years), specialist teachers (6-10 years), leader teachers (11-20 years) and supervisor teachers (more than 20 years).

Each phase of the teaching profession is characterized by a growth in expertise, knowledge and the art of teaching-teacher competences that have an impact on job satisfaction. Alongside maturing in the teaching profession, job satisfaction is also on the rise because teachers with more work experience manage better in their profession, they have more knowledge and they feel more pedagogically competent in their professional development (Sabljar, 2019). Such a result is in accordance with earlier research studies that questioned the connection between competence and the feeling of job satisfaction (Arifin, 2015; Akram et al., 2015; Singh and Kumar, 2013; Erikson, 1959 via Bryant III, 2012; Podsen, 2002 via Bryant III, 2012). However, in Bryant's III (2012) research, that was not confirmed because no significant statistical connection between career phase and job satisfaction was found. Moreover, after teaching for years, teachers change their basic professional focus towards performance, thus becoming increasingly teachers, i.e. they now gain their professional identity from being teachers rather than performers (Mills, 2004a; 2004b). This is another reason why years of experience correlate with satisfaction. The third hypothesis assumed that teachers who worked exclusively in music elementary schools (N=90) would be statistically more significantly satisfied with their job than their colleagues working in both music elementary and music high schools (N=161). This hypothesis was linked to existing research in Croatia confirming that classroom teachers are more satisfied with their job than subject teachers (Slišković, Burić and Knežević, 2016; Jurčec and Rijavec, 2015; Koludrović, Jukić and Reić Ercegovac, 2009; Vidić, 2009). Jurčec and Rijavec (2015) also list a range of international studies (e.g., Bogler, 2002; Brunetti, 2001; Klecker and Loadman, 1997; Perie, Bakeri Whitener, 1997) confirming that elementary school teachers are more satisfied with their job than high school teachers. For testing H3, a non-parametric Mann-Whitney U Test was used. The results (U=7840.5; p=0.279) reject the hypothesis; i.e., no difference between the subsamples was confirmed. There are two reasons to explain why teachers might be equally satisfied: formal education and job characteristics. Regarding the former, piano teachers have the same level of formal education whether they work in elementary or high schools; thus, they are prepared to work with different pupil age groups. As for the latter, teachers working in high schools have pupils from both elementary and high schools; they work in the same conditions one-to-one teaching provides, and with higher classes and program demands, the hourly pay rate rises; in comparison with classroom teachers who have up to 30 pupils and subject teachers for whom the number rises to a few hundred, it is clear that their satisfaction level is different.

On the other hand, the music school organization conditions, the administration, and school equipment in Croatia are all at a fairly high level, in both elementary and high schools; this is supported by the result for the JS 2 statement - *The conditions in which I perform the work of a piano teacher are excellent* (mod 6).

Accordingly, our opinion, although aware that it is the basic feeling of satisfaction detected among piano teachers, is that the results of this hypothesis reflect the real situation, and that Croatian piano teachers are equally satisfied with their job, regardless of the type of school in which they work.

The H4 hypothesis predicted that teachers with professional titles would be statistically more satisfied with their jobs than teachers with no professional titles. This hypothesis is based on the promotion regulations because, for teachers to advance to the status of mentor or advisor, they have to fulfil a whole set of conditions: extra specialization, results from their pupils entering competitions, giving lectures at specialized meetings etc., through which they accumulate points for their work, and all those activities showcase their competences. As was shown earlier, the connection between feelings of competence among piano teachers and job satisfaction has been proven in several studies. To test the H4 hypothesis, a non-parametric Kruskal-Wallis H Test was used. The variable distribution for professional title is as follows: no title, 190 teachers (81.5%), 30 mentors (12.95%), and 13 advisors (5.6%). The test results (H=7.944; p=0.019) confirm the presence of differences among the three subsamples on the dependent variable of job satisfaction. For a more detailed confirmation of differences among pairs of subsamples, Pairwise Comparisons were conducted (Figure 1).

As is visible in Figure 1, advisor teachers are more satisfied with their jobs than colleagues with no professional title because there is a statistically significant difference between teachers with no professional title and those with the highest title of advisor. From the values portrayed in Figure 1 and the accompanying table, and through the Kruskal-Wallis H Test results, it is clear that mentor teachers and advisor teachers are more satisfied with their jobs than teachers with no professional title, which is in accordance with the results presented earlier in this paper. This result has implications for teaching because some research studies (Celep, 2000 via Akram et al., 2015) indicate that more competent teachers will have a better chance of achieving the desired teaching outcomes if they are satisfied with their job

Pairwise Comparisons of Professional Titles

Each node shows the sample average rank of professional titles

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
no title-mentor	-20,607	13,210	-1,560	,119	,356
no title-advisor	-47,862	19,276	-2,483	,013	,039
mentor-advisor	-27,255	22,326	-1,221	,222	,667

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

Figure 1: *Pairwise comparisons*

Conclusion

The specifics of a piano teacher's job, which include direct interaction with pupils, direct communication, one-to-one teaching, and orientation towards the individual pupil, require teachers who are satisfied with their job. Even though this research sought to estimate general job satisfaction, without establishing which factors affect satisfaction, i.e. dissatisfaction among teachers, the results show the overall satisfaction of piano teachers. The results are encouraging, both for the profession and for school leadership. Piano teachers who work in public state schools are moderately satisfied with their jobs; there is no statistically significant difference between teachers regarding gender or type of school. Teacher satisfaction rises with years of work experience. Teachers who have the title of mentors or advisors are more satisfied with their job, especially advisor teachers, where a statistically more significant difference between advisor teachers and teachers with no title was noted.

This study constitutes the first major research on a targeted and specific group of music instructor-instrumentalists, i.e., piano teachers. The results are exceptionally important because they paint a picture of the general attitude of piano teachers towards their job. However, for further research, it would be interesting to discover the specific factors influencing job satisfaction, and how teachers estimate those factors of job satisfaction and dissatisfaction that relate to issues such as administrative support, pupil relationships, pupil achievement, parental cooperation, personal income, and appreciation of the profession in society. This research could also form a starting point for exploring other music instructor-instrumentalists, especially with the aim of splitting the teachers into those who teach and play orchestral and solo instruments, with the profession duality postulate that is balanced between professional musicians, and teachers who teach playing. Further research should also include teachers of groups and one-to-one teaching contexts, and thus also present factors and differences in job satisfaction among these two types of teachers in music schools.

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