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New challenges in education and schooling: an example of designing innovative motor learning environments

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ABSTRACT

The aim of this study is to address the key topical challenges in modern teaching from the perspective of competences. A special focus is placed on examining innovative early childhood education, which is defined as the basis – acquired through innovative methods – for quality development of hereditary motor skills and performance of body movement patterns. The study looks at which factors the respondents consider important in terms of innovative teaching of motor skills, which teaching practices they apply in their work, and the correlation between the reported importance rating of individual factors and the common practice in this particular area. The study included 132 preschool teachers, 73 (55.3%) of whom work in Slovenian and 59 (44.7%) in Croatian preschools, who completed an online questionnaire. The results show that the preschool teachers believe the most important factor in innovative teaching of motor skills is coherence of the child's overall development and that the child-oriented practice has been rated as the most important self-reported innovative teaching practice. The highest correlation ($r = 0.679$) was obtained between creativity and innovativeness and implementing child-oriented practice and between practising innovative approaches and practising professional competences ($r = 0.673$).

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1. Introduction

Rapid technological development is changing our society – and indirectly also the learning and teaching. The ways of responding to new expectations – in the area of teaching as well – differ from the ones that might have been applied a decade ago. The process of change itself is undergoing changes, and the (non-)introduction of innovations into the teaching of motor skills is becoming a major day-to-day challenge faced by school/preschool teachers.

The findings of an international study titled “Health Behaviour in School-aged Children in Slovenia” have identified the presence of negative trends in the form of a decreasing proportion of young people engaging in regular physical activities,

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increasing use of electronic gadgets, and an increasing proportion of youths regularly displaying several different psychosomatic symptoms (Jeriček Klanšček et al., 2015). Slovenian children are also overweight, which may expose them to health risks (Gabrijelčič Blenkuš, 2013). Kinesiophobia, or unfounded fear of movement, has also been identified in children, which may be due to negative experiences with movement and can be eliminated if properly addressed.

A survey among public preschool teachers on their positions with regard to the teaching of motor skills in early childhood (Retar, Štemberger, & Lepičnik-Vodopivec, 2018) has highlighted the following key factors: implementation of innovativeness into classes, reflection on teaching, acquisition of new professional competences, and cautiousness in teaching. The key areas of operation for preschool teachers who help drive innovation in the teaching of motor skills in early childhood are placement of focus on children, implementation of innovative practices, development of professional competence, self-reflection, and fear of child injury (Retar et al., 2018, pp. 259–260).

A similar survey (Retar, 2017, pp. 78–80) has found that inhibitors and triggers play an important part in the effective teaching of motor skills in early childhood. The teachers' innovativeness is increased by triggers and decreased by inhibitors of innovation. Among the key obstacles and inhibitors are: teaching habits, commercialization in education, teachers' non-conflictive behaviour, comfort zone, and fear of accidents and injuries. The key triggers are: innovative management, accepting responsibility, networking, media, lifelong learning, reflection, and innovative modeling (Retar, 2017, pp. 78–80). Retar and Blažević (2018) have found that by applying innovative didactic principles modern and competent teachers can design a more creative, dynamic, flexible and sustainable teaching which changes through development. It should be based on children's curiosity and diversity and supported by comprehensive teacher incentives. In doing so, teachers may introduce the teaching principle of lifelong learning and interconnection between theory and practice, autonomy, competence-based approach, openness and electiveness of subjects.

Quality motor development in children provides an important building block for children's healthy lifestyle. A child's development is a comprehensive process which runs in several areas at the same time: physical, motor, emotional, social and cognitive. According to Gallahue and Ozmun (1998), changes in one area provoke changes in all the other areas, which is why a motor skill teaching model that takes into account the interplay between these areas may prove to be more effective than a model which focuses strictly on subjects promoting motor skills. Both foreign (Walkley, Armstrong, & Clohesy, 1998; Gallahue & Ozmun, 1998; Harrington, 2005; Malina, Bouchard, & Bar, 2004; Stodden et al., 2008) and Slovenian researchers (Rajtmajer, 1991; Škof, 2017; Videmšek & Pišot, 2007) investigating motor development in children underline the importance of quality teaching of motor skills in early childhood, which – by helping develop motor skills and competences – may speed up motor development and facilitate optimal motor skill competence in a child.

While genetic factors play a crucial part in a child's motor development (Sheridan, Sharma, & Cockerill, 2008; Haywood & Getchell, 2012), environmental factors are important as well, which is why professional competences of preschool teachers are

vital. Motor skills such as crawling, walking and gym classes or playtime are interrelated with children's development of social skills and their understanding of social rules. Health education and hygiene practices are found to have positive effects for children and their parents. Children participating in ECEC programmes with specific hygiene and health guidelines have improved their hygiene habits, which often results in their having healthier body weight and height in comparison to their peers who do not benefit from such practices (Litjens & Taguma, 2010).

2. Research problem

Teaching of motor skills may be more effective when we teachers create a positive, safe and creative environment with many diverse practical subjects (Retar, Plevnik, Hozjan, & Kolar, 2014; Dorniak Wall, 2016; OECD, 2013; however, we often and predominantly act routinely. Research into creativity that promotes innovation in teaching conducted over the past decade (Craft, 2003; Birdi, 2007; James & Drown, 2012; Istance, 2014) suggests that it is not only teachers who matter but also the organizational structure, culture and practice.

Research into innovation in the teaching practice suggests that not only teachers are relevant (Hargreaves & Fullan, 1992; Birdi, 2007; Craft, 2003; Hodkinson, Biesta, & James, 2007; James & Drown, 2012; Retar, 2015; Retar & Lepičnik-Vodopivec, 2017b), but also that the decision to change their own pedagogical practice and to successfully implement changes are influenced by various factors such as sporting climate and culture, the availability of exchanging experience with colleagues who have already been implementing a particular innovation into their own practice, and pupils with their learning outcomes. Here, reflection can be an effective incentive for innovation because a self-critical teacher goes beyond the existing patterns of professional behavior and introduces new challenges into the teaching practice. According to Retar (2017), the teaching of motor skills (Gallahue & Ozmun, 1998; Edwards, 2010; Graham, Elliott, & Palmer, 2015; Haywood, Robertson, & Getchell, 2012; Malina et al. 2006; Pistotnik, 2017; Rajtmajer, 1991; Stodden et al., 2008) can be understood as a carefully guided workflow comprising an introductory explanation with instructions, followed by a demonstration of a physical activity task given by the teacher as a rule, and an attempt of a child to perform the new physical activity task or a solution to a new or modified motion problem in accordance with the teacher's instructions.

The aim of this study was to establish how preschool teachers rate the importance of different components of innovative teaching of motor skills and how often they practice innovative teaching.

3. Methodology

3.1. Sample

The sample comprises 132 preschool teachers, 73 (55.3%) of whom work in Slovenian and 59 (44.7%) in Croatian preschools.

3.2. Instrument and procedures

The data was collected through a previously validated questionnaire (Retar et al., 2018) made up of three sections: (i) demographic data, (ii) a scale measuring the respondents' opinion about the importance of various tasks in motor development and (iii) a self-reporting scale on the implementation of various tasks concerning motor development. The first scale consists of 22 items (whole scale $\alpha = 0.864$) measuring 6 components: (i) Creativity and innovativeness, (ii) Coherence of the child's overall development, (iii) Professional competences, (iv) Self-reflection, (v) Safety, (vi) Child-oriented practice. The second scale consists of 17 items (whole scale $\alpha = 0.871$) measuring 5 components: (i) Practising innovative approaches, (ii) Self-reflection, (iii), Professional competences (iv) Child-oriented practice, (v) Fear of injury.

4. Data analysis

The data was processed using SPSS. Basic descriptive statistics and Pearson correlation coefficient were used.

5. Results

This section presents the survey results:

- firstly, how the preschool teachers rate the importance of individual factors;
- secondly, which techniques they apply in practice,
- and lastly, the correlation between the importance ratings and the self-reported practice.

As shown in Table 1, respondents perceive all listed factors as important in developing innovative teaching methods for motor development. However, the highest average ($M = 4.75$) was obtained for the coherence of the child's overall development, followed closely by child-oriented practice ($M = 4.64$). These two results indicate that the preschool teachers are aware of the importance of the child's overall development and the importance of child-oriented practice, so planning and implementing the teaching is based on children's needs in accordance with their developmental abilities. The lowest (but still high) score was obtained on safety, which came as a minor surprise since preschool teachers in general report worrying that children might get injured during the time spent in preschool (Table 2).

Table 1. The importance of various factors in motor development.

	n	Min.	Max.	Mean	Std. Deviation
Creativity and innovativeness	132	2.67	5.00	4.39	.47
Coherence of the child's overall development	132	2.00	5.00	4.75	.41
Professional competences	131	2.00	5.00	4.26	.59
Self-reflection	130	3.00	5.00	4.58	.50
Safety	132	1.33	5.00	3.65	.73
Child-oriented practice	130	2.67	5.00	4.64	.44

Source: The Authors.

Table 2. Self-reported practice of innovative teaching.

	n	Min.	Max.	Mean	Std. Deviation
Practising innovative approaches	132	2.00	5.00	3.94	.58
Self-reflection	129	2.67	5.00	4.36	.68
Professional competences	131	1.67	5.00	3.84	.74
Child-oriented practice	132	3.00	5.00	4.66	.52
Fear of injury	132	1.00	5.00	3.33	.94

Source: The Authors.

Preschool teachers on average reported high scores on the factors of practising innovative teaching. The highest averages were reported on child-oriented practice ($M = 4.66$) and self-reflection ($M = 4.36$). Surprisingly, the lowest score was reported on fear of injury ($M = 3.33$). Presumably this is due to the fact that nursery teachers boost the children's focus and attention span by applying carefully selected didactic methods and that they reduce the fear of physical injuries by implementing suitable methods for teaching motor skills.

As shown in Table 3, there is a positive and statistically significant correlation among the vast majority of (importance rating and self-reported practice) factors. The highest correlation ($r = 0.679$) was obtained between creativity and innovativeness and practicing child-oriented practice. Child-oriented pedagogical practice takes into account children's developmental characteristics, which are very important from the perspective of a child's highly dynamic motor development (Gallahue & Ozmun, 2011; Malina et al., 2004), as attested by the factor's high correlation score.

There is also a statistically significant correlation between practising innovative approaches and practising professional competences ($r = 0.673$), which can be interpreted as an indication that innovative approaches can make the implementation more creative, dynamic, adaptable, and open to change through development. Preschool teachers therefore introduce the didactic principle of lifelong learning or the interrelation of theory and practice, which may strengthen the teacher's autonomy, competence-based approach, openness and electiveness of subjects, process development approach, flexibility of the learning process, cross-curricular approach to learning and teaching, while also promoting independence and responsibility in acquiring one's own knowledge, progress-based monitoring of motor learning outcomes, and a more in-depth cooperation with parents and other stakeholders.

Correlation was also positive and statistically significant between creativity and innovativeness and the perception of the importance of professional competence ($r = 0.661$). The preschool teachers fully recognize that they can only be innovative by pursuing professional development, obtaining additional professional training and keeping abreast of good practices in order to be able to introduce innovations into the pedagogical practice.

A statistically significant correlation was also identified between creativity and innovativeness and practising innovative approaches ($r = 0.637$). The correlation has been interpreted as stemming from the teacher's competences in identifying children's expectations and their placement at the centre of the learning process using didactic approaches that meet their expectations. In addition to quality physical activity user experience, preschool teachers also incorporate specific topics and teaching techniques and methods into their programmes. In doing so, they use communication to

Table 3. Correlation among the importance ratings of the innovative teaching factors and the self-reported practice.

	F1	F2	F3	F4	F5	F6	F1P	F2P	F3P	F4P	F5P
Creativity and innovativeness	–	.555**	.661**	.598**	.301**	.679**	.637**	.435**	.474**	.457**	.059
Coherence of the child's overall development		–	.363**	.514**	.268**	.574**	.319**	.306**	.247**	.353**	-.001
Professional competences			–	.492**	.159**	.434**	.510**	.373**	.532**	.317**	.057
Self-reflection				–	.242**	.544**	.456**	.554**	.322**	.476**	.026
Safety					–	.302**	.209**	.163**	.089**	.224**	.678**
Child-oriented practice						–	.452**	.352**	.334**	.546**	.086
Practicing innovative approaches							–	.577**	.673**	.446**	.110
Self-reflection (p)								–	.454**	.479**	.092
Professional competences (p)									–	.304**	.014
Child-oriented practice (p)										–	.163**
Fear of injury											–

Source: The Authors.

encourage, guide and supervise children on their path to accomplishing their personal goals with regard to physical activity. By providing multimedia demonstrations and with the support of information and communications technology, preschool teachers help increase the effectiveness, measurability and engagement both in terms of teaching motor skills and promoting physical activity in general.

6. Conclusion

Properly selected and organized physical/sporting activities in early childhood may help shape a child's healthy lifestyle as a collective pattern of health-related behavior based on choices from options available to children according to their life chances (Cockerham, 2005). Innovative pedagogical practices can make a significant contribution to the creative, adaptable and development-dependent progressive and child-oriented practice. Innovative teaching can be understood as a self-induced change of one's personality since in the process one acquires new and strengthens one's existing skills, eventually developing professional competence – and this is particularly important for people working in sport settings, which is a regulated profession as it is (Retar & Lepičnik-Vodopivec, 2017a). The gradual, systematic, monitored introduction of innovations into practice – which, naturally, become routine over time, and this routine gets upgraded with a new innovation later on – relies on the professional development of the teacher, who at the same time also fosters innovation competences. Despite being cautious in generalizing the results, mostly due to the small sample size and the self-reporting data collection method used in the survey, we have highlighted the issue of innovativeness faced by preschool teachers when pursuing effective teaching of motor skills. Our findings may contribute to a more transparent and articulate interpretation of what constitutes effective fulfilment of the teachers' mission with regard to the teaching of motor skills in early childhood. In the future, further research should be carried out into the degree of preschool teachers' competence in using innovative approaches in teaching motor skills since the existing strategies have been shown as rather unsuccessful and uncompetitive – with children becoming increasingly inactive, engaging less and less in physical/sporting activities.

Disclosure statement

No potential conflict of interest was reported by the authors.

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