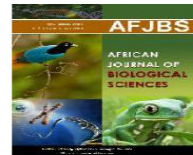




## African Journal of Biological Sciences



Research Paper

Open Access

### Lived experiences of preschool teachers in Ahwaz city regarding the participation of new students in physical activities

Fereshteh Motavaf<sup>1</sup><sup>1</sup>Masters Science Education Chamran of Ahwaz University, Ahwaz, Iran.**Article History**

Volume 6, Issue 6, 2024

Received: 03 Feb 2024

Accepted: 06 Apr 2024

doi:

10.48047/AFJBS.6.6.2024.7884-7901

**Abstract**

Given the importance of physical activity in maintaining health and physical development, integrating it with concepts from various subjects can have a positive impact on the learning process. The integration of concepts and physical activities in students aims to create a unified and compatible approach in physical education and general education. This approach focuses on the principle that physical education should not only address the physical development of students but also consider their cognitive, social, and emotional abilities. In this regard, the integration of concepts and physical activities aims to strengthen the cohesion between different aspects of education and attempts to present the concepts of various subjects in a practical and applicable manner in physical activities. Therefore, this research examines the question of what perceptions preschool instructors have about students' physical activities and how they overcome the challenges of physical activity. The study population consisted of experienced instructors with a minimum bachelor's degree and relevant to preschool centers in Ahwaz city. Based on purposive sampling, 15 participants were selected, and semi-structured interviews were conducted with them. The findings showed that through the integration of concepts and physical activities, students were able to better understand and comprehend the concepts through group activities and collaboration. Additionally, this approach allows students to develop communication, collaboration, leadership, and problem-solving skills.

**Keywords:** preschool instructors, preschool centers in Ahwaz city, student participation, challenges of physical activity.

## Introduction

According to the fundamental change document, the preschool period is the most golden period in the education process.

Today, the most effective and widely used educational programs in the preschool period are designed and compiled based on diverse and child-centered games and physical activities (Organization for Educational Research and Planning, 2019). If play and movement are removed from the daily experiences of new students, their learning and personal development will suffer (Panksep, 2007; Parsons, 2022; Shcherbin, D. V., et al. 2023).attention to physical activities in the early years of the child 's life will focus on intrinsic values such as personal success , happiness , recognizing individual differences , providing a range of regular physical activities and paying attention to the safety and recognition of the environment and commitment and creating learning opportunities and significant social consequences . children should enjoy physical processes and if the opportunities for the development of physiological aspects are not provided in the preschool period and neglect in the establishment of proper physical activities will cause irreparable mental and physical damage . motor programs and purposeful play along with other educational and nurturing activities are a suitable platform for practicing and repeating some of the mental and cognitive concepts and developing social skills in preschool ( raz et al. , 2021 ) .<sup>1</sup>

### 1.2 problem statement

since the child is in the early stages of gaining motor experiences , it is very important to present the correct motor programs and physical activities in this period . the set of activities intended for three to six - year - olds should be very simple , so that the child can do them and not cause inactivity . however , according to the iranian association for the development of sport and physical activity of children ( 2019 ) , iranian children have a much weaker status in terms of mobility than who standards . okley et al. ( 2021 ) noted that children should sleep 10 to 13 hours during the 24 hours of the day and be physically active for 180 minutes , of which more than 60 minutes should be moderate to high - intensity mobility . Mura-Gonzalez et al. (2020) found that not only should physical activity be high, but their sedentary behaviors, such as sitting in a place, should be less than 60 minutes. neglecting this important issue will cause the performance of novices in preschool centers to be significantly different from the standards of the world health organization .<sup>32</sup>

Various studies have investigated children's reactions to participation in morning physical activities and during their time in school. The findings of some studies, including the findings of the study, show that in preschool centers in Iran, physical activities are not used appropriately and most physical activities are followed to fill children's free time in a non-targeted and unplanned manner. also , the findings of the research have shown that

---

<sup>1</sup>Radez

<sup>2</sup>Okely et al

<sup>3</sup>Mora-Gonzalez et al

motor programs and targeted games along with other educational and nurturing activities are a suitable platform for practicing and repeating some mental and cognitive concepts and fostering social skills in preschool . it should also be noted that children at this age are in pre - operational period and understanding theoretical concepts without action is not possible for them and it is time consuming . according to the above mentioned programs of movement and physical activity in preschool is an important issue that cannot be ignored .

The importance and necessity of research

this research has a special attention to coaches ' current understanding of novice physical activities and its interaction effect on overcoming the challenges of these activities . important insights gained through this study into how educators ' beliefs about physical activity have important implications for guiding educators ' educational policies and practices . the information obtained through this study can be used to support meaningful discussions and familiarize the novices with the basic concepts . ~~~ this study leads to a greater understanding of the benefits of physical movement as a teaching method and changes in the type of curriculum . at the global level , the changes resulting from this study can make iran a high - performing country in the world in terms of educational outcomes for children . it is hoped that the findings of this study can help the growth and spread of knowledge in this area effectively . in addition , the findings of this study can have positive implications for guiding the policies and practices of in - service training for educators .

since pre - school centers , as the first educational and educational base after the family , have a heavy duty to meet the needs of children , therefore , having sufficient knowledge , learning the necessary skills and strengthening personal insights , full familiarity with the principles of teaching methods such as play and physical activities and active teaching methods will be essential for the education of pre - school teachers .

physical activity : according to the world health organization , physical activity is any activity or movement of the body that is caused by the contraction and expansion of skeletal muscles and requires energy ( world health organization , 2022 ) .<sup>4</sup>

lived experiences : this term is used in phenomenological studies to emphasize the importance of individual experiences as conscious humans ( creswell et al. , 2015 : 125 - 120 ) .<sup>5</sup>

educators ' perceptions : ideas , behaviors , and attitudes that affect teaching philosophy , students ' perspectives , curriculum , and practice . teachers ' beliefs about education and curriculum are as follows :

support for cognitive skills ; support for noncognitive skills that include ( the development of personality traits such as motivation , problem solving , and social emotion ( heckman , 2011 ) ) that these beliefs and beliefs are created through training and experience ( abujaber et al. , 2010 ) .<sup>76</sup>

---

<sup>4</sup>Physical activity  
<sup>2</sup>Creswell

<sup>6</sup>Heckman

<sup>7</sup>Abu -Jaber et al

novices : the definition of novices depends on the age and context in which it is used . in general , a novice is a person who is in the early stages of learning a particular subject or skill ( babae , 1398 ) .

the present study seeks to investigate the phenomenological perceptions and the way educators overcome the challenges of physical activities of novices in pre - school centers in ahvaz . this study contributes to a deeper understanding of coaches ' perceptions and how they overcome the challenges of novices ' physical activities . in this chapter , theoretical and theoretical foundations of the research background are discussed in two parts . in the first part , the concepts and theories related to the subject of the research are discussed and the theoretical foundations are introduced and the basic concepts and concepts related to the subject of the research are discussed . these principles include theories , concepts , and models related to the perceptions and how educators overcome the challenges of physical activities of preschoolers in ahvaz . these studies are done in order to be aware of the previous findings and identify gaps in the research . in the literature review section , attempts are made to review previous research in the field under consideration . this includes reviews of previous studies , similar or related to the subject , studies in the same or related field , and criticisms in this area .

### **2.1 conceptual definition of novices**

novices include those who are learning and teaching . in most cases , this concept refers to students who are studying in schools , universities or other educational institutions . novices are usually in the early and advanced stages of learning and are acquiring new knowledge and skills . They are trained by teachers and trainers and try to understand and implement new concepts and skills. novices can study a variety of disciplines and areas , including sciences , arts , humanities , technology and many more ( svid , 2015 ) .<sup>8</sup>

### **2.2 Importance of Attention to Novices**

attention to novices is very important and is important in various fields . below , according to the paper ( lockwood and morken , 2021 ) , are some of the reasons for the importance of this issue .<sup>9</sup>

1. personal development : novices are in the stage of personal development . paying attention to them and providing appropriate educational opportunities will help them to improve their skills , knowledge and abilities .

2. community structure : novices from the workforce of the future constitute the community . their proper education is the most fundamental factor in the structure and development of society and economy .

3. expert staff : novices , as skilled and educated staff , play an important role in the scientific , technological and cultural development of countries and societies . proper education and promotion of their level of knowledge contribute to the development of society and economic growth . ( lockwood and morken , 2021 ) .

---

<sup>8</sup>Swaid

<sup>9</sup>Lockwood & Mørken

therefore , paying attention to novices not only increases their productivity , but also contributes to the development of society and the progress of countries . exploiting the capacity and talent of novices and creating appropriate educational environments for them improves productivity and quality of life ( ashach , 2007 ) .<sup>10</sup>

### **2.3 arrival of preschoolers**

introduction of novices to the preschool stage is an important and transitional stage in their academic life . at this stage , children formally enter the educational system and become familiar with the new educational environment and educational culture . the following are some of the aspects and reasons why preschoolers are important ( grizzotti and kinigos , 2021 ) :

1. academic preparation : entry to pre - school helps novices to prepare for the next stages of study . they become familiar with basic concepts and skills such as alphabetic letters , numbers , counting , and basic social skills .

2. social and psychological development : entry to preschool gives novices the opportunity to interact with their peers in a socio - educational environment . They strengthen social skills such as collaboration, sharing and problem-solving. also , this stage is very important for the mental development of children .

3. Creating interest in learning: In preschool, children engage in games and educational activities. This educational environment is full of motivation and entertainment that helps children find interest and enthusiasm in learning. ( grizzotti and kinigos , 2021 ) .

due to the importance of the entry of novices to preschool , it is important to plan and implement this step properly . a supportive and friendly environment should be provided so that children can learn in this environment with confidence and joy . also , it is very important to pay attention to the needs and abilities of each child individually and to provide appropriate activities according to their individual diversity ( wing , 2006 ) .<sup>11</sup>

### **2.4 conceptual definition of lived experience of preschool educators**

the lived experience of preschool educators refers to the set of experiences , knowledge , skills , and learning processes that educators acquire in the preschool field . this lived experience includes all the experiences and lessons that educators gain in teaching , child behavior , child development , classroom management , collaboration with parents , and other factors related to preschool activities ( grover& p . ~~~ 2013 ) .

the lived experience of preschool educators includes the following ( rodriguez - martinez et al. , 2020 ) :<sup>12</sup>

1. experience in teaching and teaching : pre - school teachers become familiar with teaching experiences in various fields such as alphabetic letters , numbers , basic concepts , art and music , etc. they become familiar with the design and implementation of appropriate educational programs for children , effective teaching methods and attractive educational activities .

---

<sup>10</sup>Eshach

<sup>11</sup>Wing

<sup>12</sup>Rodríguez-Martínez et al.

2. experience in the development of children : pre - school teachers see their development by interacting with children in the educational environment . They experience how to recognize children's best learning states and organize educational programs based on each child's needs and abilities. ( rodriguez - martinez et al. , 2020 ) .

the lived experience of preschool educators not only includes specialized knowledge and skills in the field of education and training of preschool children , but also includes practical experiences , social interactions , and the many connections that result over time . this lived experience helps preschool educators to identify best practices and educational strategies for children , respond to their needs , and create an exciting and safe environment for their learners to grow and develop ( grover& p . ~~~ , 2013 ) .<sup>13</sup>

### **5.2 defining the skills of preschool educators**

pre - school teachers play an important role in the education and training of children in pre - school age . they should not only have specialized knowledge and skills in the field of children 's education and development , but also master some key skills well ( svid , 2015 ) . the following are the definition and importance of some of these skills ( loockwood et al. , 2019 ) :<sup>14</sup>

1. educational skills : preschool educators should be able to design and implement attractive and appropriate educational programs for children . they should be able to present educational content to children in a simple and understandable way and use activity - based methods and educational games .

2. communication skills : preschool educators should be able to communicate effectively with children , parents and other members of the educational community . They need to be able to properly listen, speak and communicate information so that they can understand the needs and problems of children and work with their parents and colleagues.

3. classroom management skills : preschool educators should be able to manage the classroom and create a supportive , disciplined learning environment . They must be able to maintain discipline, adhere to the right timing, and help students succeed in group activities and collaboration.

### **6.2 the importance of paying attention to the skills of preschool educators**

Preschool teachers' skills are important because:

\* have a unique impact on children 's development : preschool educators , using their skills , can actively contribute to children 's cognitive , social , motor and language development . they help children understand and develop different skills by creating appropriate educational programs , creating environmental educational spaces , and using effective educational methods .

\* foster children 's intelligence and social development : pre - school educators , by mastering educational , communication and management skills , help children develop their

---

<sup>13</sup>Grover & Pea

<sup>14</sup>Lockwood et al.

intelligence , creativity , critical thinking and social skills . these skills are fundamental to success in children 's lives and future education . ( gunidavik et al. , 2020 ) .<sup>15</sup>

### **7.2 educational skills of preschool teachers**

The educational skills of preschool teachers include a set of skills and capabilities that enable them to effectively and optimally process the education of children in the preschool age. the following are some of the main teaching skills of preschool educators ( jung et al. , 2021 ) :<sup>16</sup>

1. educational planning : pre - school educators should be able to design and plan education . they should be able to identify appropriate skills , concepts and content for children and develop attractive and diverse educational programs to provide children with .

2. appropriate educational methods : preschool educators should be familiar with appropriate educational methods for children . they should be able to use activity - based methods , educational games , educational tools and group activities to make education attractive and effective .

3. Evaluation and follow-up: Preschool teachers should be able to assess and track the progress of children. They should be able to assess children's skills and knowledge, identify their strengths and weaknesses, and design appropriate educational programs for each child.

( jong et al. , 2021;Lee, J. H. 2022) .

### **8.2 relationships between pre - school teachers and students**

the relationship between pre - school teachers and students is very important and influential . these relationships can have a positive impact on children 's development and make the educational environment better and more exciting for them ( zhi and shi , 2020 ) . the following are some aspects and importance of the relationship between pre - school teachers and students ( tsoy and tergast , 2007 ) :<sup>1817</sup>

1. secure communication : the relationships of pre - school teachers and students can provide safe and conservative communication for children . the presence of a kind , supportive , and ready - to - hear educator and understanding the needs of children , creates trust and positive communication between them .

2. motivation and interest : the teacher 's close relationship with students can be a factor in increasing children 's motivation and interest in learning . the occurrence of a positive relationship between the teacher and the student causes the children to come to the educational environment with enthusiasm and enthusiasm and participate freely and confidently in activities and learning .

3. problem solving and social development : by building relationships with students , preschool educators can help children solve everyday problems and help them develop

---

<sup>15</sup>Gnidovec et al

<sup>16</sup>Jong et al

<sup>17</sup>Zhai& Shi

<sup>18</sup>Tsui&Treagust

social skills and work with others . These relationships can prepare children to deal with social issues and teach them how to communicate well with others.

in general , the relationship between pre - school teachers and students is very important in providing appropriate educational environment , children 's personal and social development and facilitating their learning . these relationships allow children to participate in their educational environment with confidence and enthusiasm and to bring out the best version of themselves ( ng et al. , 2023 ) .<sup>19</sup>

## **9.2 learning environment in preschool centers**

the learning environment in pre - school centers should be attractive , content and appropriate for children . These environments should allow children to actively and creatively participate in them and learn new skills and knowledge. following are some of the characteristics of the learning environment in preschool settings ( ng et al. , 2023 ) :

1. safety and comfort : the learning environment should be safe and comfortable for children . this includes access to safe areas , age - appropriate equipment , adequate air conditioning and spaces for rest and recreation . also , the materials used in decoration and equipment should be safe and good quality for children .

2. diversity and adjustability : the learning environment must respond to different needs and interests of children through diversity and adjustability . this includes various spaces for play and recreation , diverse educational resources , toys , books and educational materials . it allows children to choose appropriate activities to suit their tastes and interests .

3. contact with the natural environment : having contact with the natural environment , such as the garden , outdoors or dealing with pets and plants , is very beneficial for children . It allows them to interact directly with natural elements and learn from nature. also , the open air environment is very valuable for outdoor mobility and play . ( ng et al. , 2023 ) .

## **10.2 motor skills of preschoolers**

motor skills in preschool are very important for students , because at this stage of life , children are developing their physical development . motor skills are divided into two major categories : dry motor skills and wet motor skills ( nogira et al. , 2021 ) .<sup>20</sup>

Dry motor skills include skills that are performed without the use of water. some of the dry motor skills are ( sind et al. , 2022 ) .<sup>21</sup>

1. skill movements : these include skills such as jumping , jumping with one leg , jumping over small obstacles , throwing and catching balls , and various hand movements . these movements help children improve their balance , hand - eye coordination , and motor accuracy .

---

<sup>19</sup>Ng et al

<sup>20</sup>Nogueira et al

<sup>21</sup>Sand et al



2. Fast movements: These include movements such as running, running at speed, twisting and turning, touching the ball, etc. These movements help children increase their cardiovascular strength and improve physical endurance.

3. balance movements : these include movements such as staying in one leg , walking along the lines on the ground , walking on the slide , and balancing in different positions . These movements help children improve their body's ability to balance and control.

more motor skills are related to movements that require water . some of the more motor skills include :

1. swimming : children in preschool can learn to move in water by learning to swim . this skill helps children strengthen their breathing ability , endurance , and body muscles .

2. play with the blue ball : these games include throwing and catching the blue ball , jumping over the blue ball , and waving the blue ball .

3. Mechanical skills: These skills include the use of various tools and playthings, such as puzzles, lego, pen and paper, knitting, crochet, etc. these activities help children develop their manual skills , focus and attention , problem - solving , and creativity .

( sindh et al. , 2022; Kauser, S., et al. 2022) .

motor skills are very important for children in preschool because by practicing and strengthening these skills , they can improve their physical strength , motor coordination , balance , endurance , and problem - solving abilities and be well prepared to enter the next educational stage ( tesa , 2009 ) .

### **11.2 physical health of preschoolers**

The physical health of preschoolers is very important, because in this period of life, the main foundations for health and healthy growth are laid in the future. physical health care in this period includes factors such as proper nutrition , physical activity , personal hygiene , and proper rest ( cheney and lukewood , 2022; Asar, M. E., et al. 2023 ) . the following are some of the important aspects of pre - school students ' physical health ( cheney and luke wood , 2022 ) :<sup>22</sup>

1. proper nutrition : it is very important to provide healthy and proper nutrition for children during this period . foods that are rich in nutrients , vitamins and minerals should be included in their diet . this includes fruits , vegetables , whole grains , healthy proteins such as fish , poultry and dairy . also , skills related to healthy eating , such as knowing the types of foods , preferring healthy foods and consuming them appropriately , should be taught in this course .

2. physical activity : regular and appropriate physical activity strengthens muscles , cardiovascular endurance , fitness and general health of students . in this period , children should participate in daily physical activities and active play . these activities can include playing in the park , running , jumping , throwing and catching balls , cycling , and other activities that improve children 's ability to move .

---

<sup>22</sup>Chenne& Lockwood

3. personal hygiene : teaching personal hygiene to children during this period is very important . they should be familiar with skills such as washing their hands properly , cleaning their teeth , using paper towels properly , cleaning their bodies , and more . these skills help children maintain personal hygiene and prevent transmission of diseases and infections .

finally , the cooperation of parents , educators and educators is very important in creating a healthy environment and supporting the physical health of preschool children . providing health education , creating a safe and active environment for play and physical activity , and addressing children 's health needs can help maintain and promote their physical health ( cheney and lukewood , 2022 ) .

### **Conclusion :**

- in general , it can be said that educators , using appropriate planning , attractive exercises , encouragement and cooperation with parents , overcome the challenges of physical activity of novices and try to engage them actively in physical activities . the findings of this study were compared with those of kiel and harris ( 2018 ) , utch et al. ( 2019 ) , . shadiou et al. ( 2020 ) , stehlmann et al. ( 2020 ) , dadaeizarch&salehi ( 2010 ) , heydarianbayi et al. ( 1400 ) , yaftinos et al. ( 2022 ) , thomas et al. ( 2022 ) , achacheloi et al. ( 1401 ) and zolmirzaevich ( 2022 ) are consistent . in the philosophical interpretation of these findings , it can be said that from the viewpoint of existentialism , each individual is responsible for his or her own choices and activities . in the case of physical activity , novices have to face various challenges such as fatigue , lack of motivation and fear of failure . by providing appropriate exercises and creating a supportive environment , educators can help novices overcome these challenges and find the meaning of physical activity in their lives . pragmatism also emphasizes the importance of practical experience and tangible findings . coaches can help novices overcome the challenges of physical activity and achieve their goals by using different methods such as careful observation , effective communication , and presentation of regulation strategies . in this regard , it should be acknowledged that there is no single and complete approach to overcome the challenges of physical activity of novices . educators can gain a deeper and more comprehensive understanding of challenges by using a variety of philosophical theories

### **References:**

- Abu-Jabar, M, Al-Shwareb, A&Gheith, E. (2010). Kindergarten teacher's beliefs toward developmentally appropriate practice in Jordan. *Early Childhood Education Journal*, 38, 65-74. doi:10.1007/s10643-010-0379-z
- Afthinos, Y,Kiaffas, Z&Afthinos, T. (2022). The Serious Game “Top Eleven” as an Educational Simulation Platform for Acquiring Knowledge and Skills in the Management of Sports Clubs. *Technology, Knowledge and Learning*, 27(1), 255-273.

- Agranovich, Y•Amirova, A•Ageyeva, L•Lebedeva, L•Aldibekova, S•&Uaidullakzy, E. (2019). The formation of self-organizational skills of student's academic activity on the basis of 'time management' technology. *International Journal of Emerging Technologies in Learning (iJET)*, 14(22), 95-110.
- Ahmad, K•Erqou, S• Shah, N•Nazir, U• Morrison, A. R•Choudhary, G•& Wu, W. C. (2020). Association of poor housing conditions with COVID-19 incidence and mortality across US counties. *PloS one*, 15(11), e0241327.
- Arnon, I•Cottrill, J• Dubinsky, E•Oktaç, A• Fuentes, S. R•Trigueros, M•& Weller, K. (2014). APOS theory: A framework for research and curriculum development in mathematics education. Springer. [https://doi.org/10.1007/978-1-4939-9814-1\\_10](https://doi.org/10.1007/978-1-4939-9814-1_10).
- Asar, M. E., Saleh, E., & Ghaneapur, M. (2023). Innovative and motivational SDT-based approach to promote Iranian women's physical activity. *Journal of Advanced Pharmacy Education and Research*, 13(1), 62-65. <https://doi.org/10.51847/gcrJpRS1SU>
- Asempapa, R. S•& Love, T. S. (2021). Teaching math modeling through 3D-printing: Examining the influence of an integrative professional development. *School Science and Mathematics*, 121. <https://doi.org/10.1111/ssm.12448>.
- Asrial, A•Syahrial, S•Kurniawan, D. A•Subandiyo, M•&Amalina, N. (2019). Exploring Obstacles in Language Learning among Prospective Primary School Teacher. *International Journal of Evaluation and Research in Education*, 8(2), 249-254.
- Barr, V•& Stephenson, C. (2011). Bringing computational thinking to K-12: What is involved and what is the role of the computer science education community? *ACM Inroads*, 2. <https://doi.org/10.1145/1929887.1929905>.
- Battaglia, G•Giustino, V•Tabacchi, G•Alesi, M•Galassi, C•Modica, C• ... &Bellafiore, M. (2020). Effectiveness of a physical education program on the motor and pre-literacy skills of preschoolers from the training-to-health project: a focus on weight status. *Frontiers in sports and active living*, 2,579421.
- Behnamnia, N•Kamsin, A• Ismail, M. A. B•&Hayati, S. A. (2022). A review of using digital game-based learning for preschoolers. *Journal of Computers in Education*, 1-34.
- Behzadnia, B• Adachi, P. J• Deci, E. L•&Mohammadzadeh, H. (2018). Associations between students' perceptions of physical education teachers' interpersonal styles and students' wellness, knowledge, performance, and intentions to persist at physical activity: A self-determination theory approach. *Psychology of Sport and Exercise*, 39,10-19.
- Bell, T. P. (2012). A letter from ITEEA's president. *Technology and Engineering Teacher*, 71
- Berland, M•&Wilensky, U. (2015). Comparing virtual and physical robotics environments for supporting complex systems and computational thinking. *Journal of Science Education and Technology*, 24. <https://doi.org/10.1007/S9552-015-10956-X>.
- Bråting, K•&Kilhamn, C. (2021). Exploring the intersection of algebraic and computational thinking. *Mathematical Thinking and Learning*, 23. <https://doi.org/10.1080/10986065.2020.1779012>.

- Cale, L.& Harris, J. (2018). The role of knowledge and understanding in fostering physical literacy. *Journal of Teaching in Physical Education*, 37(3), 280-287.
- Chene, A.& Lockwood, E. (2022). A task to connect counting processes to lists of outcomes in combinatorics. *The Journal of Mathematical Behavior*, 65. <https://doi.org/10.1016/j.jmathb.2021.100932>.
- Correia, V.&Carvalho, J.&Araújo, D.&Pereira, E.&Davids, K. (2019). Principles of nonlinear pedagogy in sport practice. *Physical education and sport pedagogy*, 24(2), 117-132.
- Cui, Z.& Ng, O. (2021). The interplay between mathematical and computational thinking in primary school students' mathematical problem-solving within a programming environment. *Journal of Educational Computing Research*, 59. <https://doi.org/10.1007/s112097993010.1177>.
- Dako-Gyeke, M.&Oduro, R. (2013). Effects of household size on cash transfer utilization for orphans and vulnerable children in rural Ghana. *Academic Journal of Interdisciplinary Studies*, 2(1), 239.
- Davis, C.&Patte, K.& Curtis, C.& Reid, C. (2010). Immediate pleasures and future consequences. A neuropsychological study of binge eating and obesity. *Appetite*, 54(1), 208-213.
- Echeverria, L.&Cobos, R.& Morales, M. (2019). Improving the students computational thinking skills with collaborative learning techniques. *Revista Iberoamericana De Tecnologias Del Aprendizaje*, 14. <https://doi.org/10.1109/RITA.2019.2952299>.
- Ernst, D. C.& Hodge, A.&Yoshinobu, S. (2017). What is inquiry-based learning. *Notices of the AMS*, 64.
- Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal education. *Journal of Science Education and Technology*, 16. <https://doi.org/10.1007/s-1-9027-006-10956>.
- Gnidovec, T.&Žemlja, M.&Dolenec, A.&Torkar, G. (2020). Using augmented reality and the structure behavior function model to teach lower secondary school students about the human circulatory system. *Journal of Science Education Technology*, 29. <https://doi.org/10.1007/s8-09850-020-10956>.
- Grizioti, M.&Kynigos, C. (2021). Code the mime: A 3D programmable charades game for computational thinking in MaLT2. *British Journal of Educational Technology*, 52. <https://doi.org/10.1111./bjet.13085>.
- Grover, S.& Pea, R. (2013). Computational thinking in K–12: A review of the state of the field. *Educational Researcher*, 42. <https://doi.org/10.3102/X12463051>.
- Hastie, P. A.& Wang, W.& Liu, H.& He, Y. (2021). The effects of play practice instruction on the badminton content knowledge of a cohort of Chinese physical education majors. *Journal of Teaching in Physical Education*, 1(aop), 1-9.
- Holzberger, D.& Philipp, A.&Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. *Journal of Educational Psychology*, 105. <https://doi.org/10.1037/a0032198>

- Hsu, T. C., Chang, S. C., & Hung, Y. T. (2018). How to learn and how to teach computational thinking: Suggestions based on a review of the literature. *Computers and Education*, 126. <https://doi.org/10.1016/j.compedu.2018.004>.
- Izumi-Taylor, S., & Rogers, C. (2016). You are not the boss of me: How Japanese teachers delegate authority to children through play. *Childhood Education*, 92(3), 210-215.
- Jackson, A., Mentzer, N., & Kramer-Bottiglio, R. (2021). Increasing gender diversity in engineering using Soft Robotics. *Journal of Engineering Education*, 110. <https://doi.org/10.1002/jee.20378>
- Jocius, R., Ian O'byrne, W., Albert, J., Joshi, D., Robinson, R., & Andrews, A. (2021). Infusing computational thinking into STEM teaching. *Technology & Society*, 24. <https://doi.org/48629253/10.2307>
- Jong, T., Gillet, D., Rodríguez-Triana, M. J., Hovardas, T., Dikke, D., Doran, R., & Law, E. (2021). Understanding teacher design practices for digital inquiry-based science learning: The case of Go-Lab. *Educational Technology Research and Development*, 69. <https://doi.org/10.1007/s09904-020-11423-z>
- Kauser, S., Morrissey, H., & Ball, P. (2022). England local community pharmacists opinions on independent prescribing training. *Journal of Advanced Pharmacy Education and Research*, 12(1), 30-37. <https://doi.org/10.51847/PaNZ94aVtA>
- Kidwai, K. S. (2020). Play in early years: Educators' views and practices. *International Journal of Education and Management Studies*, 10(4), 336-341.
- Krüger, J. M., Palzer, K., & Bodemer, D. (2022). Learning with augmented reality: Impact of dimensionality and spatial abilities. *Computers and Education Open*, 3. <https://doi.org/10.1016/j.cao.2021.100065>.
- Lanier, K. V., Killian, C. M., Wilson, K., & Ellis, R. (2022). Physical Education Participation and Student Anxiety, Depression, and/or Stress: A Scoping Review. *Kinesiology Review*, 11(3), 209-219.
- Lee, J. H. (2022). Factors affecting the academic performance of low-and high-performing dental students: evidence from Japan. *Journal of Advanced Pharmacy Education and Research*, 12(3), 82-86. <https://doi.org/10.51847/Ow4oR7HGFg>
- Lockwood, E., & Chénne, A. (2020). Enriching students' combinatorial reasoning through the use of loops and conditional statements in Python. *International Journal of Research in Undergraduate Mathematics Education*, 6. <https://doi.org/10.1007/S00108-019-40753>.
- Lockwood, E., & Mørken, K. (2021). A call for research that explores relationships between computing and mathematical thinking and activity in RUME. *International Journal of Research in Undergraduate Mathematics Education*, 7. <https://doi.org/10.1007/S2-00129-020-40753>.
- Lockwood, E., Jarnette, A. F., & Thomas, M. (2019). Computing as a mathematical disciplinary practice. *Journal of Mathematical Behavior*, 54. <https://doi.org/10.1016/j.jmathb.2019.004>.

- Love, T. S. Roy, K. R. Gill, M. & Harrell, M. (2022). Examining the influence that safety training format has on educators' perceptions of safer practices in makerspaces and integrated STEM labs. *Journal of Safety Research*, 82. <https://doi.org/10.1016/j.jsr.2022.05.003>.
- MacQueeney, P. Lewis, E. Fulton, G. Surber, C. Newland, K. Hochstetler, E. & Tilak, S. (2022). Applying Piaget to classroom teaching: Stage development and social learning theory. *Theories, strategies and semiotic tools for the classroom: The*.
- Mielke, G. I. Bailey, T. G. Burton, N. W. & Brown, W. J. (2020). Participation in sports/recreational activities and incidence of hypertension, diabetes, and obesity in adults. *Scandinavian Journal of Medicine & Science in Sports*, 30(12), 2390-2398.
- Miller, A. R. & Saenz, L. P. (2021). Exploring relationships between playspaces, pedagogy, and preschoolers' play-based science and engineering practices. *Journal of Childhood, Education & Society*, 2(3), 314-337.
- Mora-Gonzalez, J. Esteban-Cornejo, I. Solis-Urra, P. Migueles, J. H. Cadenas-Sanchez, C. Molina-Garcia, P. ... & Ortega, F. B. (2020). Fitness, physical activity, sedentary time, inhibitory control, and neuroelectric activity in children with overweight or obesity: The ActiveBrains project. *Psychophysiology*, 57(6), e13579.
- Nassaji, H. (2020). Good qualitative research. *Language Teaching Research*, 24(4), 427-431.
- Newman, B. S. Dannenfelser, P. L. & Pendleton, D. (2005). Child abuse investigations: Reasons for using child advocacy centers and suggestions for improvement. *Child and Adolescent Social Work Journal*, 22(2), 165-181.
- Ng, O. & Cui, Z. (2021). Examining primary students' mathematical problem-solving in a programming context: Towards computationally enhanced mathematics education. *ZDM - Mathematics Education*, 53. <https://doi.org/10.1007/s7-01200-020-11858>
- Ng, O. Liu, M. & Cui, Z. (2021). Students' in-moment challenges and developing maker perspectives during problem-based digital making. *Journal of Research on Technology in Education*, 4. <https://doi.org/15391523,2021,1967817/10,1080>
- Ng, O. Sinclair, N. Ferrara, F. & Liang, B. (2023). Transforming arithmetic through digital resource. In B. Pepin, G. Gueudet, & J. Choppin (Eds.), *Handbook of digital (curriculum) resources in mathematics education*. Springer.
- Nogueira, V. B. Teixeira, D. G. Lima, I. A. C. N. Moreira, M. V. C. Oliveira, B. S. C. Pedrosa, I. M. B. Queiroz, J. W. & Jeronimo, S. M. B. (2021). Towards an inclusive digital literacy: An experimental intervention study in a rural area of Brazil. *Education and Information Technologies*, 27. <https://doi.org/10.1007/s10711-021-10639-z>
- Okely, A. D. Kariippanon, K. E. Guan, H. Taylor, E. K. Suesse, T. Cross, P. L. ... & Draper, C. E. (2021). Global effect of COVID-19 pandemic on physical activity, sedentary behaviour and sleep among 3-to 5-year-old children: a longitudinal study of 14 countries. *BMC Public Health*, 21(1), 1-15.

- Panksepp, J. (2007). Can PLAY diminish ADHD and facilitate the construction of the social brain?. *Journal of the Canadian Academy of child and adolescent psychiatry*,16(2),57.
- Parsons, R. (2022). Moving Out to Move Up: Higher Education as a Mobility Pathway in the Rural South. *RSF: The Russell Sage Foundation Journal of the Social Sciences*,8(3),208-229.
- Pei, C·Weintrop, D·&Wilensky, U. (2018). Cultivating computational thinking practices and mathematical habits of mind in Lattice Land. *Mathematical Thinking and Learning*, 20. <https://doi.org/10986065,2018,1403543,10,1080>
- Piaget, I. (1964). Cognitive development in children: Piaget development and learning. *Journal, of Research in Science Teaching*, 2,176-186.
- Psycharis, S·&Kallia, M. (2017). The effects of computer programming on high school students' reasoning skills and mathematical self-efficacy and problem solving. *Instructional Science*, 45. <https://doi.org/10,1007/s5-9421-017-11251>
- Radez, J· Reardon, T· Creswell, C· Lawrence, P. J·Evdoka-Burton, G·& Waite, P. (2021). Why do children and adolescents (not) seek and access professional help for their mental health problems? A systematic review of quantitative and qualitative studies. *European child & adolescent psychiatry*,30(2), 183-211.
- Rich, K. M·Spaepen, E· Strickland, C·& Moran, C. (2020). Synergies and differences in mathematical and computational thinking: Implications for integrated instruction. *Interactive Learning Environments*, 28. <https://doi.org/10494820,2019,1612445,10,1080>
- Rodríguez-Martínez, J. A· González-Calero, J. A·&Sáez-López, J. M. (2020). Computational thinking and mathematics using Scratch: An experiment with sixth-grade students. *Interactive Learning Environments*, 28. <https://doi.org/10494820,2019,1612448/10,1080>.
- Rutherford, T· Long, J. J·&Farkas, G. (2017). Teacher value for professional development, self-efficacy, and student outcomes within a digital mathematics intervention. *Contemporary Educational Psychology*, 51. <https://doi.org/10,1016/j.cedpsych.2017.05,005>
- Sand, O. P· Lockwood, E· Caballero, M. D·&Mørken, K. (2022). Three cases that demonstrate how students connect the domains of mathematics and computing. *The Journal of Mathematical Behavior*, 67. <https://doi.org/10,1016/j.jmathb.2022,100955>
- Sanjar, U·&Doston, H. (2022). creativity in improving professional and pedagogical skills of physical education teachers. *international journal of research in commerce, it, engineering and social sciences issn:2349-7793 Impact Factor: 6,876,16(10),60-67*
- Savasci-Acikalın, F. (2014). A study of pre-service teachers' science teaching efficacy beliefs during the elementary science laboratory course. *Procedia - Social and Behavioral Sciences*, 141. <https://doi.org/10,1016/ j.sbspro.2014,05,038>



- Scrimsher, S.&Tudge, J. (2003). The teaching/learning relationship in the first years of school: Some revolutionary implications of Vygotskya's theory. *Early Education & Development*, 14. <https://doi.org/10.1207/s15566935eed1403-3>
- Sekulic, D•Blazevic, M•Gilic, B•Kvesic, I•&Zenic, N. (2020). Prospective analysis of levels and correlates of physical activity during COVID-19 pandemic and imposed rules of social distancing; gender specific study among adolescents from Southern Croatia. *Sustainability*, 12(10),4072.
- Shadiev, R•& Yang, M. (2020). Review of studies on technology-enhanced language learning and teaching. *Sustainability*, 12(2), 524.
- Shcherbin, D. V., Egorov, D. E., Beloglazov, M. V., &Keino, A. Y. (2023). Using Fusion Circuit Training to Reduce Overweight (Obesity) Among High School Students. *Archives of Pharmacy Practice*, 14(3), 38-40. <https://doi.org/10.51847/nklH2Tf0OI>
- Shufutinsky, A. (2020). Employing use of self for transparency, rigor, trustworthiness, and credibility in qualitative organizational research methods. *OD practitioner*, 52(1), 50-58.
- Sinclair, N•& Patterson, M. (2018). The dynamic geometrisation of computer programming. *Mathematical Thinking and Learning*, 20. <https://doi.org/10986065,2018,1403541/10,1080>
- Sirakaya, M•AlsancakSirakaya, D•&Korkmaz, Ö. (2020). The impact of STEM attitude and thinking style on computational thinking determined via structural equation modeling. *Journal of Science Education and Technology*, 29. <https://doi.org/10.1007/s6-09836-020-10956>
- Stahl, N. A•& King, J. R. (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*,44(1), 26-28.
- Stahlmann, K•Hebestreit, A•DeHenauw, S•Hunsberger, M•Kaprio, J•Lissner, L• ... &Bogl, L. H. (2020). A cross-sectional study of obesogenicbehaviours and family rules according to family structure in European children. *International Journal of Behavioral Nutrition and Physical Activity*, 17(1), 1-12.
- Stewart, J. (1983). Student problem solving in high school genetics. *Science Education*, 67. <https://doi.org/10.1002/sec.3730670408>
- Swaid, S. I. (2015). Bringing computational thinking to STEM education. *Procedia Manufacturing*, 3. <https://doi.org/10.1016/j.promfg.2015,07,761>
- Tang, X• Yin, Y• Lin, Q•Hadad, R•&Zhai, X. (2020). Assessing computational thinking: A systematic review of empirical studies. *Computers & Education*, 148. <https://doi.org/10.1016/j.compedu.2019,103798>
- Testa, J. (2009). The Thomson Reuters journal selection process. *Transnational Corporations Review*, 1. <https://doi.org/19186444,2009,11658213/10,1080>
- Thomas, J. R• Martin, P•Etnier, J•& Silverman, S. J. (2022). *Research methods in physical activity*. Human kinetics.



- Threeton, M. D.&Evanoski, D. C. (2014). Occupational safety and health practices: An alarming call to action. *Career and Technical Education Research*, 39. <https://doi.org/10.5328/cter39.2.119>
- Toychievich, K. I. (2022). Historical Characteristics, General Content and Stages of Development of Physical Education. *Journal of Pedagogical Inventions and Practices*, 5, 18-21.
- Tschannen-Moran, M.& Barr, M. (2004). Fostering student learning: The relationship of collective teacher efficacy and student achievement. *Leadership and Policy in Schools*, 3. <https://doi.org/15700760490503706/10,1080>
- Tsui, C. Y.&Treagust, D. F. (2007). Understanding genetics: Analysis of secondary students' conceptual status. *Journal of Research in Science Teaching: THE Official Journal of the National Association for Research in Science Teaching*, 44. <https://doi.org/10,1008/tea.20116>
- Tuychiyevich, X. I. (2022). Development Stages and Characteristics of the History of Physical Education. *Central asian journal of social sciences and history*, 3(2), 5-8.
- Utesch, T·Bardid, F·Büsch, D·& Strauss, B. (2019). The relationship between motor competence and physical fitness from early childhood to early adulthood: A meta-analysis. *Sports Medicine*, 49(4), 541-551.
- Weintrop, D· Beheshti, E· Horn, M· Orton, K·Jona, K·Trouille, L·&Wilensky, U. (2016). Defining computational thinking for mathematics and science classrooms. *Journal of Science Education and Technology*, 25. <https://doi.org/10,1007/s5-9581-015-10956>
- Wilkerson-Jerde, M. H. (2014). Construction, categorization, and consensus: Student generated computational artifacts as a context for disciplinary reflection. *Educational Technology Research and Development*, 62. <https://doi.org/10,1007/s0-9327-013-11423>
- Wing, J. (2006). Computational thinking. *Communications of the ACM*, 49. <https://doi.org/1118178,1118215/10,1145>
- World Health Organization. (2022). Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Part 1, Diagnosis and classification of diabetes mellitus (No. WHO/NCD/NCS/99,2). World health organization.
- Wu, C·& Sang-Yeol, L. (2022). The application of art therapy based on particle swarm optimization method for preschool children's mental health. *Wireless Communications and Mobile Computing*, 2022.
- Xolmirzaevich, A. J. (2022). Improving Theoretical Fundamentals of Physical Culture Classes. *Texas Journal of Engineering and Technology*, 9, 88-91.
- Ye, Z· Dun, A· Jiang, H·Nie, C· Zhao, S· Wang, T·&Zhai, J. (2020). The role of 3D printed models in the teaching of human anatomy: A systematic review and meta-analysis. *BMC Medical Education*, 20. <https://doi.org/10,1186/s02242-020-12909-x>
- Zhai, X·& Shi, L. (2020). Understanding how the perceived usefulness of mobile technology impacts physics learning achievement: A pedagogical perspective. *Journal of Science Education and Technology*, 29. <https://doi.org/10,1007/s6-09852-020-10956>

- Zhamardiy, V. O·Shkola, O·Okhrimenko, I. M·Strelchenko, O. G·Aloshyna, A. I·Opanasiuk, F. H· ... &Prontenko, K. V. (2020). Checking of the methodical system efficiency of fitness technologies application in students' physical education. *Wiadomości Lekarskie*,73(2),332-341.
- Zhao, L·& Zhao, Y. (2021). The construction of the fusion and symbiosis path of infant sports development based on intelligent environment. *Mathematical Problems in Engineering*, 2021.