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Teaching Sports and Exercises Science: experiences and life skills of a lecturer

Insegnare Scienze Motorie: esperienze e abilità di un docente universitario

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Abstract

The following document reports the experiences and life skills developed under the current didactic situation in Sports and Exercise Science. In particular, the manuscript discusses the pedagogic theories that should be fostered to improve the return to campus. The real-life experiences are presented in light of the Social and Emotional Learning and the Learning by Doing theories. The following document aims to reflect on social constructivism and embodied theories to improve the new (post-covid) learning environment. The introduction focuses on the Quality Assurance Agency for Higher Education benchmark statement and progresses to the most recent Blended approaches. With reflections upon in-class assessments, spaces and pace. In conclusion, the cartesian dualism (body-mind) is discussed and ideas for future research in pedagogy are presented to improve teaching and learning experiences in the post-covid scenario.

Keywords: social constructivism; pedagogy; sports science; learning theories; life skills.

Sintesi

Il documento ha come scopo quello di riflettere sul costruttivismo sociale e sulle *embodied theories* per migliorare il nuovo ambiente di apprendimento (post-covid). Il seguente documento riporta le esperienze e le abilità sviluppate nell'attuale situazione didattica, nello specifico riguardo le scienze motorie. In particolare, nel testo sono discusse le teorie pedagogiche che dovrebbero essere incoraggiate per migliorare il ritorno in aula. Le esperienze didattiche sono presentate alla luce delle teorie dell'apprendimento sociale ed emotivo e del *Learning by Doing*. L'introduzione si concentra sul *Quality Assurance Agency for Higher Education benchmark* e presenta i più recenti approcci didattici definiti *Blended*, con l'aggiunta di riflessioni su valutazioni, spazi e ritmo della classe. In conclusione, viene discusso il dualismo cartesiano (corpo-mente) e vengono presentate idee per future ricerche in pedagogia al fine di migliorare le esperienze di insegnamento e di apprendimento nello scenario post-covid.

Parole chiave: costruttivismo sociale; pedagogia; scienze motorie; teorie dell'apprendimento; life skills.

1. Introduction

The following document aims to share and reflect on the current educational situation. In particular, the author focuses on teaching Sports and Exercise Sciences in the UK and presents the latest data and strategies used abroad to augment, improve, and facilitate teaching at the university level. The following is based on British government data, which is presented through personal reflections and experiences of the author: a university lecturer of sports conditioning and injury biomechanics for sports therapy students in England at the University of Derby. The data are also discussed based on experience gained at the University of Naples Parthenope (ITA), where the author delivered seminars and worked as a mentor and didactic tutor for PhD candidates.

2. Teaching and Learning Sports and Exercise Science

Sports and Exercise Science is a growing sector. A recent report showed that sports science graduates contribute £ 4 billion to the UK economy, supporting over 150.000 jobs. It has also been found that sports and exercise science graduates earn nearly £ 670.000 throughout their careers, and for every £ 1 a student spends on their education, they have a return of £ 5.50 (Hawkey, Lumb, & Stanton, 2019). These data are certainly encouraging as regards the possibilities of engagement and the resources that graduates in Sports Sciences can draw on.

According to the Quality Assurance Agency for Higher Education (QAA) (House & Street, 2004), Sports and Exercise Science fall within the study group called Events, Hospitality, Leisure, Sport and Tourism **(**Ehlts**)**. The reason why these disciplines have been grouped according to this benchmark is to be found in the fact that they all share common themes, as shown in Figure 1. In particular, from a pedagogical point of view, a characteristic common to all Ehlts is the amount of practice and learning by doing (Reese, 2011). For example, in Sports and Exercise Sciences, students need to engage in practical activities that facilitate their learning experience and prepare them to work in health, professional or recreational sectors (Raiola & Di Tore, 2017).

The reason for these needs is in the discipline's characteristics and how the students assimilate the information. As reported by Huizinga (2014) in *Homo Ludens*, the integration of activities related to sport/play facilitates the learning experience**,** and it supports the theoretical framework (made up of anatomy, physiology, biomechanics, etc.) necessary for the degree. In addition, as also described in the embodied theories, the combination of physical activities with standard learning (i.e. in the classroom) facilitates cognitive learning and improves students' achievements (measured as their ability to learn and remember what has been studied) (Ceciliani, 2018).

Therefore, the role of sports science teachers is to guide students and show them the combination of practical and theoretical aspects. It is important to show the movements and gestures they will be recreated and performed later, a combination of theoretical and physical learning.

The reason is biological and has to do with how information is processed. Briefly, if a video with a specific movement is played or if a teacher performs an athletic gesture, it is important to repeat it at least 3-5 times so that the mirror neurons can process information and communicate with the brain, which will re-create the image of the movement that our cerebral cortex will subsequently use to repeat the gesture. A process belonging to the

Motor Learning Theories (Keysers, 2009; Rodríguez, Cheeran, Koch, Hortobágyi, & Fernandez-del-Olmo, 2014). Figure 2 summarises part of these concepts from a biological perspective.

Events	Hospitality	Leisure	Sport	Tourism
Consideration of the concepts and characteristics of events as an area of academic study Nature of events and structure, composition, and management of the sector Consideration of international, cultural, and global environmental contexts Consumer psychology Conception and planning of events	The nature of hospitality as an area of academic and applied study The management of technical operations, such as food and drink and accommodation The hospitality industry and its global environment, including sustainability issues and the use of technology The consumer of hospitality Professional development and learning opportunities in the hospitality industry.	The historical, philosophical, economic, political, sociological, and psychological dimensions of free time Cultures and subcultures, lifestyle, and identity. The structure, composition, and management of the leisure industries The construction of the leisure experience in a range of managerial contexts including products, services, and opportunities The breakdown of free time into concepts, activities, functions and meanings and the implications of these for personal actions and professional practice Differential models of consumption and use of free time. The development of digital and creative industries in leisure time consumption	The performance of sport and physical exercise and its enhancement, monitoring and analysis Aspects relating to health and disease management of exercise and physical activity Dissemination and historical, social, political, economic, and cultural impact of sport Policy, planning, management, and provision of sports opportunities.	Concepts and characteristics of tourism as an area of academic and applied study concerning economic, managerial, and social sciences in general and at the local, national, and global level Destination management, development, policy, governance, and strategy. Tourism economics, economic impacts, and contributions to society (from global to local) Sustainability, ethics, and well-being in tourism. Regional, national, and international security, protection, risk, resilience and crisis management Tourism in cultures, communities and environments.

Figure 1. Main concepts of Event, Hospitality, Leisure, Sport, and Tourism areas. Modified from Quality Assurance Agency for Higher Education benchmark statement (House & Street, 2004).

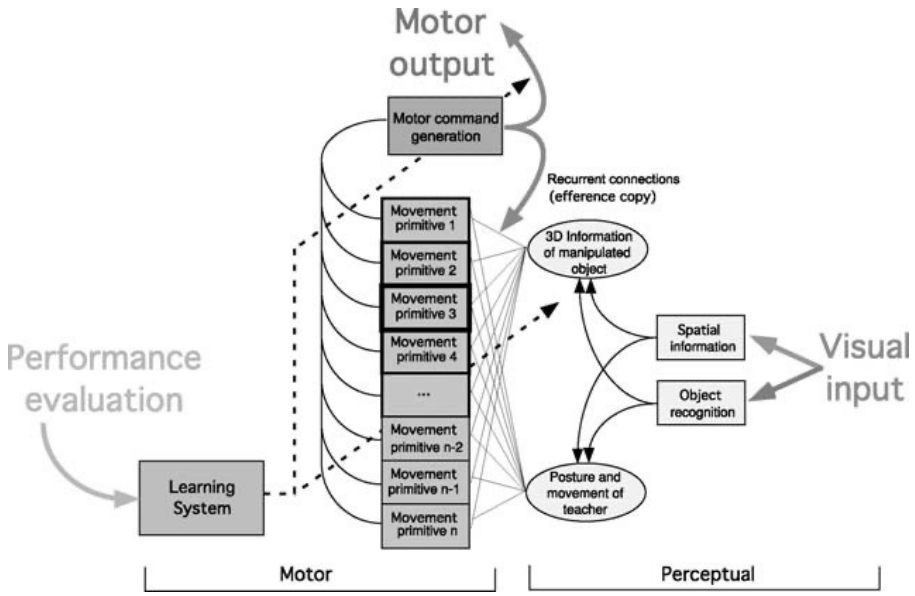

Figure 2. Conceptual computational sketch of motor control and motor learning. On the right side the perceptual elements that report how visual information is transformed into spatial information. On the left side the motor elements. Adapted from Arbib, 2006.

Based on what has been mentioned, particularly on the importance of practising and observing specific movements through learning-by-doing and embodied theories, it is possible to conceive additional aspects to standard (in class) teaching which need to be included during the didactic experiences. An example is the theories of learning related to emotion, such as Social and Emotional Learning (SEL). The SEL is defined as the ability to interpret and organise emotions, solve problems effectively and establish positive relationships with others (peers or teachers) (Zins & Elias, 2007).

The SEL theories are extremely relevant nowadays due to the recent lack of social and emotional interaction caused by the COVID-19 pandemic (Katić, Ferraro, Ambra, & Iavarone, 2021). Therefore, in the same way students learn academic notions, with the SEL approach, students learn and apply socio-emotional skills by engaging in positive activities inside and outside the classroom. These skills are then improved and integrated to address students‘ growing learning-emotion complexity in terms of studies, social relationships and health (Ferraro, 2010; Jagers, Rivas-Drake, & Williams, 2019).

Based on this introduction, among many of the potential teaching strategies that can be used in Sports and Exercises Science, one combines physical activity, learning-by-doing, embodied theories and SEL through collaboration with others (peers or teachers): Social Constructivism.

3. Pedagogic Approaches: The Social Constructivism

Similar to Piaget‘s theories, in which learners are the creators of their knowledge, Social Constructivism states that students learn through interaction with peers and teachers (Gallagher & Reid, 2002; Prawat, 1999). This theory derives from the work of Vygotskiĭ (1997) and, in particular, from the discussions on the *genetic law of cultural development*,

in which it is stated that in every function of cultural development, a student appears twice: first socially and subsequently psychologically.

In other words, intra-mental categories teach students the interaction between and within people (Vygotskiĭ, 1997). However, Vygotskiĭ's theory lays its foundations in earlier theories already mentioned by Greek philosophers such as Aristotle and Plato. In fact, both philosophers discussed the importance of social interactions and commitments to facilitate the learning experience (Plato, IV sec. a.C./2005; Stonehouse, Allison, & Carr, 2011). Based on Vygotskiĭ's theory of social constructivism, teachers can facilitate their students' learning experience by using the Zone of Proximal Development (ZPD), which combines independent problem-solving and the level of potential development determined by solving problems under the guidance of an adult or in collaboration with more capable peers (Vygotskiĭ, 1997).

This learning tool suggests that students learn better when collaborating with more knowledgeable ones (Shabani, Khatib, & Ebadi, 2010) (Figure 3).

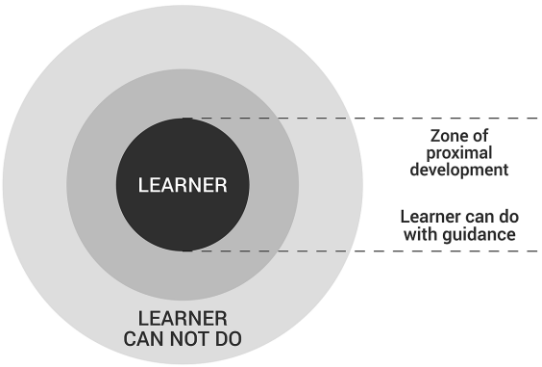

Figure 3. Zone of proximal development (ZPD). Adapted from Teigland, Siri, Larsson, Puertas, & Bogusz, 2018.

However, to keep the student engaged and facilitate the learning process, it is important to keep students in their ZPD very often. This can be achieved by assigning students complex problem-solving tasks that require them to work together (with a peer or teacher) (Ketterer, 2008). The theory suggests that students, after completing the task in the ZPD, are more likely to pass the same task individually, which increases the overall ZPD (Chaiklin, 2003).

But within Sports and Exercise practices, these theories need further consideration. Indeed, when students are in the ZPD, the most theoretically prepared student may not be the most skilled in motor activities, so the concept around structuring and organising groups may change. Hence, in the last decade, there has been a growing critique of social constructivism in exercise science, particularly against the Cartesian dualism, in which mind and body are separate: "I think, therefore I am". This concept has been hailed as a "diabolical dualism" of education (Dewey, 1916). In fact, it contrasts with the embodied theories and socio-emotional practices mentioned in the previous paragraph and binds the Sports and Exercise Science to the following dualism: physical activity (for example, in the gym) or theoretical teaching (in the classroom).

Therefore, Social Constructivism must be adapted to the specific needs of students by moving away from diabolical dualism, facilitating a more holistic approach, and combining the most skilled students in motor activities (not necessarily more theoretically informed) as points of reference and support inside the ZPD.

4. In practice: life skills and competencies applied to Sports and Exercise Science

To adapt Social Constructivism to the needs of Sports and Exercise Science students, there have been several hypotheses in the last two decades. Munafo (2016) has enclosed the didactic organisation in five subgroups: aspects related to teachers, working groups, games and rules, spaces and times, assessments and self-assessments. However, these five, dated more than seven years old, need to be reconsidered based on the current scenario.

4.1. Aspects Related to Teachers

The role of the teacher must be contextualised with the current post-pandemic situation. It is necessary to consider the absence of classroom activities that negatively affect students' physical and mental health (Watson, Capp, Astor, Kelly, & Benbenishty, 2022). The recent didactic lines recommended that teachers support the learning experience by inviting students to arrive at the answers differently (the concept of thinking outside the box). This can now be achieved by combining ZPD with additional technological support (such as Socrative or Padlet), as suggested by the Blended Applied Learning Model (BALM) (Khan, Sivasubramaniam, Anand, & Hysaj, 2021).

4.2. Working Groups

As Social Constructivism suggests, students should be encouraged to take responsibility for the organisation and managing work groups to embrace leadership roles. These skills are in great demand in the sporting environment (Figure 1). However, teachers should take the lead and develop appropriate cooperative behaviours before working in groups and promoting collaborative learning (Dyson & Rubin, 2003).

4.3. Games and Rules

As mentioned above, games are essential for enhancing the learning experience, particularly in Sports and Exercise Sciences (Huizinga, 2014), but the rules must be adapted to students' levels and needs (Lieberman & Houston-Wilson, 2009), for instance, by keeping into consideration the latest guidelines on Sustainability (i.e. safeguarding the principles of Equality, Diversity and Inclusion) which, in particular in sports, are not always respected (McCullough, Kellison, & Melton, 2022). Working in ZPD and modifying the rules is also supported by the Constructionist Theory of Learning (Kynigos, 2015), as students will be guided to reflect and reshape their constructs to adapt them to the changing rules (Hay & Barab, 2001).

4.4. Spaces and Times

Participation in physical activities has its roots in students' intrinsic and extrinsic motivations to participate in sports-related activities (Vallerand, 2007). It has been noted that students' perception of *being successful* in a sporting activity is linked to the students' willingness to participate in it (Armitage, 2005). Therefore, the lesson spaces and times must be modified according to the needs of the students to promote their motivation and participation in motor and sports activities. But as teachers, we must be aware that the space and time of teaching have been profoundly modified by the situation caused by COVID-19 (Ferraro, Ambra, Aruta, & Iavarone, 2021). Figure 4 provides an example of a structured practice session before COVID-19.

Allocated time (min)	Activities
5-7	Free play activities among students
2- 3	Introductory activity
30	Game and fitness development
10	Concluding activities and reflections among and with students on difficulties, successes, emotions and what new has been learned

Figure 4. Generic example of a session of Sports and Exercise Sciences. Adapted from De Anna, 2009.

4.5. Assessments and Self-assessments

Assessments are a crucial part of the learning process, regardless of whether they are completed at the end of a module (such as a summative assessment) or in the middle (such as a formative assessment) (Taras, 2005). However, for Sports and Exercise Science students, as part of their learning experience, it is essential that assessments are chosen for their analogy to the work activities they are going to perform (Comoglio, 2002; Wiggins, 1993). Therefore, considering what is reported in Figure 1, the assessments should reflect the students' abilities to work in different sectors (including health and sports conditioning), focusing no more practical elements (including coaching, sports massage, training, etc.).

5. Conclusion

In conclusion, Social Constructivism still seems to be a valid pedagogical theory that can facilitate the return to the classroom. However, it should be done with the help of additional pedagogic approaches to reshaping the theories of constructivism based on what we have observed in recent years due to COVID-19.

In the future, qualitative and quantitative research should collect students' experiences over their university years to monitor how the spaces and learning times can be changed and to monitor sustainability aspects constantly. A clear example comes from the recent blended approaches in which students can work remotely with only some specific activities on university campuses. This new learning system had a significant impact if we consider the new e-sport market (DiFrancisco-Donoghue, Balentine, Schmidt, & Zwibel, 2019) and telemedicine (Nittari et al., 2020) through which the use of devices allows to administer specific training programs without ever having to meet patients.

Therefore, we can affirm that teaching in disciplines that require practice has many complex challenges ahead that can be faced through constant dialogue and collaboration with the students who use and work with our teaching activities. Finally, teachers should integrate more elements of technology combining Blended approaches into their learning and practical activities, since these (e.g., the meta verse) are more and more requested in the Sports and Exercises industry.

Reference list

Armitage, C. J. (2005). Can the theory of planned behavior predict the maintenance of physical activity? *Health psychology, 24*(3), 235–245.

Ceciliani, A. (2018). From the embodied cognition to the embodied education in the physical and sports sciences. *Encyclopaideia, 22*(51), 11–24.

Comoglio, M. (2002). La «valutazione autentica». *Orientamenti pedagogici, 49*(289), 93–112.

De Anna, L. (2009). *Processi formativi e percorsi di integrazione nelle scienze motorie*. Roma: FrancoAngeli.

Dewey, J. (1916). Democracy and education: An introduction to the philosophy of education. New York, NY: The Free Press.

Di Francisco-Donoghue, J., Balentine, J., Schmidt, G., & Zwibel, H. (2019). Managing the health of the eSport athlete: an integrated health management model. *BMJ open sport & exercise medicine, 5*(1), e000467.

Dyson, B., & Rubin, A. (2003). How to implement cooperative learning in your elementary education program. *Journal of Physical Education, Recreation, and Dance, 74*(1), 48–55.

Ferraro, F. V., Ambra, F. I., Aruta, L., & Iavarone, M. L. (2021). Students' perception of distanced learning: a retrospective analysis. *Formazione & insegnamento. Rivista internazionale di Scienze dell'educazione e della formazione, 19*(1), 533–543.

Ferraro, G. (2010). *La scuola dei sentimenti: dall'alfabetizzazione delle emozioni all'educazione affettiva*. Napoli: Filema.

Gallagher, J. M., & Reid, D. K. (2002). *The learning theory of Piaget and Inhelder*. Lincoln, NF: iUniverse.

Hawkey, A., Lumb, B., & Stanton, K. (2019). Impact of sport and exercise science education on the UK economy. *The Sport and Exercise Scientist* (62), 8–9.

Hay, K. E., & Barab, S. A. (2001). Constructivism in practice: A comparison and contrast of apprenticeship and constructionist learning environments. *The Journal of the Learning Sciences, 10*(3), 281–322.

Huizinga, J. (2014). *Homo ludens ils 86*. London: Routledge.

Jagers, R. J., Rivas-Drake, D., & Williams, B. (2019). Transformative social and emotional learning (SEL): Toward SEL in service of educational equity and excellence. *Educational Psychologist, 54*(3), 162–184.

Katić, S., Ferraro, F. V., Ambra, F. I., & Iavarone, M. L. (2021). Distance Learning during the COVID-19 Pandemic. A Comparison between European Countries. *Education Sciences, 11*(10), 595–613.

Ketterer, J. (2008). Zone of proximal development. *Encyclopedia of educational psychology, 2*, 1017–1022.

Keysers, C. (2009). Mirror neurons. *Current Biology, 19*(21), 971–973.

Khan, Z. R., Sivasubramaniam, S., Anand, P., & Hysaj, A. (2021). 'e'-thinking teaching and assessment to uphold academic integrity: lessons learned from emergency distance learning. *International Journal for Educational Integrity, 17*(1), 1–27.

Kynigos, C. (2015). Constructionism: Theory of learning or theory of design? *12th International Congress on Mathematical Education 2012*, Seoul.

Lieberman, L. J., & Houston-Wilson, C. (2009). *Strategies for inclusion: A handbook for physical educators*. Human Kinetic.

McCullough, B. P., Kellison, T., & Melton, E. N. (2022). *The Routledge Handbook of Sport and Sustainable Development*. London: Routledge.

Munafo, C. (2016). The role of the social constructivism in physical education. *International Journal of Sport Culture and Science, 4*(4), 489–497.

Nittari, G., Khuman, R., Baldoni, S., Pallotta, G., Battineni, G., Sirignano, A., Amenta, F., & Ricci, G. (2020). Telemedicine practice: review of the current ethical and legal challenges. *Telemedicine and e-Health, 26*(12), 1427–1437.

Plato (2005). *The symposium*. London: Penguin. (Original work published IV sec. a.C.)

Prawat, R. S. (1999). Social constructivism and the process-content distinction as viewed by Vygotsky and the pragmatists. *Mind, Culture, and Activity*, 6(4), 255–273.

Raiola, G., & Di Tore, P. A. (2017). Motor learning in sports science: Different theoretical frameworks for different teaching methods. *Sport Science, 10*(S1), 50–56.

Reese, H. W. (2011). The learning-by-doing principle. *Behavioral development bulletin, 17*(1), 1–19.

Rodríguez, Á. L., Cheeran, B., Koch, G., Hortobágyi, T., & Fernandez-del-Olmo, M. (2014). The role of mirror neurons in observational motor learning: an integrative review. *European Journal of Human Movement 32*, 82–103.

Shabani, K., Khatib, M., & Ebadi, S. (2010). Vygotsky‘s zone of proximal development: Instructional implications and teachers‘ professional development. *English language teaching, 3*(4), 237–248.

Stonehouse, P., Allison, P., & Carr, D. (2011). Aristotle, Plato, and Socrates: Ancient Greek perspectives on experiential learning. In T. E. Smith & C. E. Knapp (Eds.), *Sourcebook of experiential education: Key thinkers and their contributions* (pp. 18-25). New York, NY: Routledge.

Taras, M. (2005). Assessment–summative and formative–some theoretical reflections. *British journal of educational studies, 53*(4), 466–478.

Vallerand, R. J. (2007). Intrinsic and extrinsic motivation in sport and physical activity: A review and a look at the future. Hoboken, NJ: John Wiley & Sons, Inc.

Vygotskiĭ, L. S. (1997). *The collected works of LS Vygotsky: The history of the development of higher mental functions* (Vol. 4). New York, NY: Springer Science & Business Media.

Watson, K. R., Capp, G., Astor, R. A., Kelly, M. S., & Benbenishty, R. (2022). “We Need to Address the Trauma“: School Social Workers′ Views About Student and Staff Mental Health During COVID-19. *School Mental Health*, *14*(4), 902–917.

Wiggins, G. P. (1993). *Assessing student performance: Exploring the purpose and limits of testing*. Jossey-Bass.

Zins, J. E., & Elias, M. J. (2007). Social and emotional learning: Promoting the development of all students. *Journal of Educational and Psychological consultation, 17*(2-3), 233–255.