

Article

The Challenges and Realities of E-Learning during COVID-19: The Case of University Sport and Physical Education

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Abstract: E-learning quickly became a crucial tool for universities and other higher education institutions during the global COVID-19 pandemic. The field of sport and physical education (PE) was no exception. However, though there is considerable growth in digital technologies in sport or physical education, we have very little evidence about the use and outcomes of these technologies. Thus, this study aims to document how e-learning technologies and pedagogical approaches were employed in the field of sport, the challenges and successes associated with these approaches, and potential avenues for improvement. To do so, a total of 27 responses were collected with two online qualitative surveys, one respectively for students ($n = 15$) and one for teachers ($n = 12$). Structured follow-up interviews with four students and one additional teacher were conducted to verify and deepen the responses. The findings show that interaction and variety were critical components of successful online learning. However, teachers reported difficulties motivating students, especially if no visual connection was present. Ultimately, even with innovation, variety, and interaction, sport and physical education's practical and social nature does not fully translate to the online setting. Thus, we conclude by proposing potential avenues for practice and research to respond to the challenges documented here.



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1. Introduction

E-learning can be defined as self-paced or real-time online internet learning in relation to the end user [1]. Additionally known as distance learning, e-learning became the primary method of instruction for universities and other higher education institutions during the global COVID-19 pandemic with one global survey indicating that 85% of universities used e-learning as their teaching model during the pandemic [2]. Though we recognise that there are debates around the exact definition and scope of e-learning [3], for our purposes, we understand e-learning as a having a broad scope focusing specifically on systems of delivery. More precisely, we adopt a definition “whereby e-learning is an on-line education defined as the self-paced or real-time delivery of training and education over the internet to an end-user device” [4].

Despite what felt like a sudden transition for many, online teaching and learning literature is rich and longstanding. Existing good practices for face-to-face teaching have been adapted to online teaching [5]. As online teaching has become more prevalent, further good practices and theoretical models have also been elaborated [6–10]. These include dividing good practices into three categories: (1) course design, (2) interaction among course participants, and (3) instructor preparation and support [6] as well as creating a sense of online learning community while supporting rapid advancement of technology [11].

Elsewhere, the Multimodal Model contends that teachers should seek to use multiple approaches that meet the needs of a broad spectrum of students and thus recognises

that learners have different backgrounds and learning styles. For instance, self-study, reflection, community building, or student-generated content are integrated into the model. Ultimately, this mixture allows students to experience learning in ways they are most comfortable while also challenging them to learn in other ways [7].

However, there are numerous challenges in fully adopting such good practices or models even under normal circumstances. E-learning is generally more time-consuming for the instructor due to, for instance, increased preparation time, managing questions outside of the online course setting, and the grading of online material [6,12,13]. Furthermore, the lack of adequate training in delivering e-learning makes the development and implementation of courses difficult for the instructors and students. Instructors, for example, often receive no or only little training before being asked to deliver an online course [6]. Further challenges can include the lack of measurable strategic goals, the need to license expensive software, and the potential risks for disruption connected to the increasing dependency on technology as a medium (e.g., power outages, natural disasters, hacking, etc.) [14].

The sudden and jarring shift to e-learning caused by the COVID-19 pandemic only served to reinforce these challenges. For instance, the lack of technological resources, poor internet quality, and a lack of information communication technology (ICT) knowledge have been important barriers, especially in developing countries [15]. Such technical problems have been only one component of the challenges faced by students and teachers related to e-learning during the pandemic. The emerging literature on the topic also identifies a number of health-related problems and interaction-related challenges. Students' physical and mental health were affected due to the sudden physical isolation, health concerns, and the difficulties posed by the asynchronous nature of online learning [16,17]. For instance, a recent study showed that 71% experienced increased stress and anxiety since the start of the online learning period [16]. In addition, challenges concerning adequate online interaction between the students as well as between them and their instructors represent a significant issue for online learning during the pandemic. The distant nature of e-learning, combined with the new negotiation of (self) identity presented by videoconferencing software, further magnifies these interaction-related challenges [18].

The sport and physical education field, arguably, faced an even more significant challenge than other more theoretical disciplines. Sport, after all, is an inherently physical, practical, and interactive subject, and these features do not always easily translate to the online setting [19]. As with other subjects, of course, there is first a need for easy-to-understand "organisational and technical resources", good internet connections, user-friendly e-learning tools, and a positive learning environment for all the students and instructors [19–21]. However, creating these conditions may be easier in more theoretical subjects as opposed to in sport disciplines or other areas that require practical or hands-on learning. For instance, students' living or working space may limit their ability to implement or practice certain sport activities, and there are limitations to the levels of individualised feedback teachers can deliver [22]. To minimise the impact of such limitations, the growing literature around the topic suggests several good practices related to sport and physical education. These include designing inclusive learning spaces, fostering peer interaction, building a community, developing innovative assessment designs, providing clear structure, and ensuring instructors have adequate non-technical skills [23–25]. Often, the tools used for sport-focused e-learning are similar to those in other fields, and include conferencing tools such as Zoom or Teams, learning management tools such as Moodle, as well as interactive tools such as forums or quizzes [19,25].

Overall, both before and during the pandemic, there has been an increasing volume of studies looking at sport and physical education at the university level [17,23–25] and many studies concerned with physical education delivery at the primary or secondary school levels, e.g., [22,26,27]. However, though there is considerable growth in digital technologies in sport or physical education, there is little evidence about how these technologies are used and whether they optimise student learning [28]. Thus, the research questions to be investigated are (1) How has the shift to distance education during the COVID-19 pandemic

with respect to sport and physical education affected learning? (2) What have been the successes and challenges of using e-learning during COVID-19 for sport and physical education, and (3) How can e-learning be improved for sport and physical education during COVID-19? These questions are important to answer as, even once the pandemic subsides, e-learning will likely remain integral to many educational models. Understanding the challenges, realities, and opportunities presented by online sport and physical education will become an ever more relevant issue.

To do so, we explore the experiences of University teachers and students through the use of qualitative online surveys and structured interviews. In particular, here, we focus on the experiences of teachers and students regarding the transition to e-learning and attempt to understand the challenges, successes, and recommendations associated with these experiences. In doing so, we can propose potential avenues for further development and improvement. Moving forward, we will first present an overview of the overall methodology of the paper. Then, we will present the main themes that were identified from our results. Finally, to conclude, we will discuss these results against the existing body of literature and present perspectives on the future usage of e-learning in tertiary sport and physical education.

2. Methodology

2.1. Survey Design

For the following, we opted for an online qualitative survey design. Here, we understand qualitative surveys as self-administered surveys consisting “of a series of open-ended questions” that are “presented in a fixed and standard order to all participants” [29]. Though there are misplaced notions about the depth of such research, this design offers a flexible approach that allows researchers to reach larger samples than is typically feasible with traditional interviews [29]. Such qualitative surveys are also advantageous for participants, as they are an unobtrusive, less burdensome form of data collection than traditional interviews. Finally, online qualitative surveys are especially appropriate for sample populations that are actively engaged in digital life and are comfortable with communicating online. Given the nature and topic of the survey, this was deemed to be the case here. In addition, to obtain additional background and depth, we conducted a handful of follow-up, face-to-face interviews to expand on the findings obtained from the survey. In the following sections, we describe the overall methodology in more detail.

To design the survey, we followed existing recommendations [29]. We created two versions of the survey, one for students and one for teachers. We focused on a limited set of six open-ended questions, asked a minimal amount of demographic/background questions, and first piloted the surveys with a group of teachers and students. In both surveys, the open-ended questions focused on the set-up/preparation for e-learning, structures and tools used, challenges, successes and avenues for improvement. Broadly speaking, the chosen questions reflect themes present in other literature that address issues around satisfaction and engagement with e-learning tools in sport [23,30,31]. Furthermore, these questions directly relate to the research questions outlined above and help us identify the impact of the switch to e-learning, challenges, successes, and potential avenues for improvement. Students and teachers received quite different versions of the question related to challenges or successes. This was done in order to ensure that student responses focused on their pedagogical experience as opposed to other facets of the pandemic. In the end, space was also given for respondents to provide unstructured, additional thoughts on the topic. The main questions for each survey are presented in Table 1 below.

At the beginning of the survey, the purpose of the study was explained to participants, they were given an overview of the questions and provided with information on how the data would be used. Responses were kept anonymous, and all participants provided informed consent before starting the survey.

Table 1. Overview of qualitative survey questions.

Topic	Teacher Questions	Student Questions
Preparation/Set-Up	Please explain how you prepared for the shift to delivering online classes	Please tell us about how you were set-up to participate in online classes
Structure and Tools	How did you structure your online classes (e.g., pre-recorded podcasts/videos, online meetings) and which tools did you use (e.g., powerpoint, surveys, videos)?	What kind of approaches (e.g., pre-recorded podcasts/videos, online meetings) and tools (e.g., powerpoint, surveys, videos) did you experience in your online courses?
Challenges/Successes	Did you face any challenges in giving online courses and, if so, how did you try to overcome them?	Which online tools or approaches worked particularly well, and why? Which online tools or approaches did not work so well, and why?
Improvement	What could be done to improve your online teaching delivery?	What could be done to improve your online learning experience in the future?
Future	Are you considering staying with an e-learning model (e.g., fully or hybrid) once face-to-face teaching is possible again? Please explain your opinion	Do you plan on using with online learning opportunities in the future? Why or why not?

Based on the initial survey responses, we then designed a short, semi-structured follow-up interview guideline to explore some of the emerging themes from this survey. These interviews aimed to obtain additional depth and feedback on responses obtained in the online survey [29], especially related to the experience and structure of online courses and the future use of e-learning tools. In particular, these questions focused on how e-learning preparation could be better supported, how certain course types (e.g., lectures, practical courses, or field trips) were affected by the shift to e-learning and how they expect e-learning to develop in the future. Both students and teachers were asked about the same topics, and the researchers asked probes or follow-up questions based on responses.

2.2. Participants and Access

Sampling for each survey was done in a deliberate fashion to target teachers and students engaged in various academic fields related to sport. For the teacher survey, teachers working for members of the European Network of Sport Education (ENSE) were contacted via e-mail and further encouraged to respond via social media. ENSE is a non-profit, network-based organisations that facilitates projects and exchange on sport education in Europe. Our institution is a member of this organisation, and the first author is a member of the organisation serves as Secretary General [32]. Thus, this provided us with access to educators working across multiple disciplines associated with sport and helped us obtain 12 survey responses from educators from 11 different institutions. Table 2 provides an overview of teacher respondents.

On the student side, students from two English-language Master degree programmes at the German Sport University were approached via e-mail and Moodle, leading to another 15 responses (7 male, 8 female). As this is our home institution, we had direct access to these students. Furthermore, these students—by the nature of their academic programmes—participate in a range of theoretical, research-based (e.g., research projects), and practical courses (e.g., field trips and practical lessons on sport for development methods).

Table 2. Overview of teacher respondents.

Teacher #	Country	Fields
1	Germany	Sport for Development
2	United States	Sport Management
3	Netherlands	Sport Management, Sociology, Sports Coaching
4	Kosovo	Sport Science and Movement
5	Portugal	Physical Education, Sport Coaching
6	Italy	Sports Coaching, Sport Performance, Sport for all
7	Malta	Physical Education
8	Germany	Sport Tourism
9	Greece	Sport Science
10	Romania	Physical Activity and Health
11	Portugal	Physical Exercise
12	Germany	Sport Psychology

Based on these responses, follow-up interviews were conducted with four students and one teacher. Convenience sampling was used to target individuals in our immediate learning and teaching environment to provide further insight into the identified topics. This means we targeted students and teachers from our home institution. These individuals were contacted, directed by e-mail to participate in a follow-up interview, and were part of the initial pool of initial survey respondents. Not only did this allow us easier access, but given our intimate knowledge of the institution, it allowed us to pose questions and follow-ups with more depth and insight. Interviews lasted between 25 and 45 min, took place in comfortable, informal settings, and were documented through contemporaneous and post-interview notes.

2.3. Data Analysis

The process of thematic analysis [33] was used to analyse the data, and survey responses and interview notes were analysed together. This process includes familiarising oneself with the data, generating initial codes, searching for themes, reviewing themes, and defining themes.

First, both authors independently read through the responses and interview notes, took extensive notes and formulated a first list of preliminary codes to describe the approaches, challenges, and successes associated with e-learning in sport and physical education. At this stage, we also began noting potential, preliminary themes.

Second, the first author coded the responses from each survey and interview in MaxQDA2020 using this list of codes. Generally speaking, codes reflected how individuals prepared for e-learning, the tools or approaches used, perceived challenges, and opportunities. Throughout the coding process, memos and notes were taken [34,35]. Both authors then reviewed the codes, memos, and data together. A final list of themes was generated and agreed upon, including ‘a sudden shift’, ‘striving for interaction’, and ‘lack of resources and support’.

3. Results

In the following, we present results from both the online qualitative survey and face-to-face interviews together. This presentation is divided according to the three main themes identified: ‘a sudden shift’, ‘striving for interaction’, and ‘lack of resources and support’. Throughout, quotations and external literature are used to support the presentation and contextualisation of our results.

3.1. A Sudden Shift

The first theme was related to the sudden shift from in-person teaching to online teaching. This shift was, of course, due to the unplanned outbreak of the COVID-19 virus, which forced many institutions to transition to partial or complete e-learning models. For many teachers, this sudden shift forced them to jump into online teaching with little or no

preparation, essentially putting them into a trial-by-fire, learning-by-doing type of situation. Though some teachers reported already having some form of experience, knowledge, or support within their institutions, most felt that “there really was no time to prepare”, which led to “experimenting” (Survey, Teacher 12) and “lots of mistakes” (Survey, Teacher 11). Most strikingly, one respondent even admitted getting hired only a week before the start of classes. Despite this, the participants in our research appear to have made considerable efforts to prepare for this change. Not only did teachers experiment and try new things, but they proactively researched new tools and information, “talked with other teachers to share experiences” (Survey, Teacher 11) or even “practised the online course” beforehand (Survey, Teacher 3).

Nonetheless, this shift not only meant a significant re-organisation of the class structure itself but also of many of the tasks around teaching. In other words, the transition to online teaching also caused an increase in their teaching and administrative workloads. Delivering online teaching “really requires time” (Survey, Teacher 3), especially in terms of preparation, and there has been a connected increase in overall communication and coordination. As one respondent put it, “there are too many e-mails” (Survey, Teacher 12). In short, these responses echo observations elsewhere that e-learning requires increased time for preparation, communication, and coordination time [6,12,13]. For students, this shift and disruption meant that the schedule and structure of their classes were also perturbed. The timing, format, and delivery of the courses changed regularly and, often suddenly, in line with shifting COVID-19 regulations.

Ultimately the unexpected change in delivery format and uncertainty around it created numerous challenges for students and teachers, especially, as we will discuss next, in terms of generating and sustaining motivation and interaction.

3.2. *Striving for Interaction*

The need for variety and interaction was a significant theme for the students in our survey. The feeling of distance created through pre-recorded lectures or slide-based presentations greatly limited student motivation, engagement, and satisfaction. For instance, one student observed that “lectures do not work online. You just cannot focus for 1.5 h when nothing else is happening. Interaction is definitely needed in an online classroom” (Survey, Student 3). Another student echoed this sentiment, adding that technical issues can further exacerbate these issues: “It was very hard to motivate myself to follow pre-recorded lectures, especially if they were accompanied by technical issues” (Survey, Student 15). Additionally, even with interaction, it was seen as important to integrate variety. Using the same structure and tools every week, even if it includes interactive activities such as discussions or breakout rooms, did not create a satisfying learning environment for students. They instead wished for diversity in tools and approaches. Interestingly, these results demonstrate the immense perceived value of variety and interaction in even theoretical classes. Furthermore, these results reinforce the contention made within Picciano’s Multimodal Model [7], whereby various approaches are recommended to meet the needs of a diverse student body.

As a result, many students reported wanting not only variety but even a level of “games” and entertainment within their online learning experience:

“I know that classes are not made to entertain us but keeping the concentration up is harder during online classes because you’re at home, in your bedroom, distracted by things, you just keep the screen on the side and don’t listen anymore after 30 min. So, probably having more interacting activities is a good way to stimulate discussions and more human interactions”. (Survey, Student 3)

Tools or approaches such as pop quizzes, videos, word clouds, open discussions, whiteboards, or other group work were reported as valuable methods. In particular, lecturers indicated using a variety of software or tools, Moodle, Canva, Jamboard, Teams, WebEx, and more were used to host and deliver content. To an extent, though students

recognised their limits, even pre-recorded lectures were appreciated as they allowed for more flexibility than live classes.

Generally, teachers in our study appeared to recognise this need. They actively strived to create interactive learning opportunities by using a wide array of methods and software. Tools and approaches used included hybrid courses, inviting guest lecturers to deliver content, hosting interviews, and integrating tools such as Menti, Mural, Padlet, Kaltura, and others: “I tried to do it interactively, even if it was called a lecture” (Interview, Teacher 1). When it came to practical sport courses, teachers likewise attempted to work with the online environment. For instance, some teachers recorded specific sports or drill demonstrations, while others invited their students to record their practice sessions and upload them for feedback.

Despite these efforts, teachers felt that interaction and feedback were severely limited. On the one hand, this was due to the lack of visual contact with the students, since often webcams were not activated, leaving teachers to speak with blank screens. This not only prevented teachers from generating sustained, verbal interaction with the group, but also limited teachers’ ability to react to the overall mood and non-verbal cues of the group: “the biggest challenge for sure was not seeing the students faces and therefore having no idea if the presented content was understood or not if the students are actually engaged in the topic if the content was presented in an interesting way” (Survey, Teacher 8). The lack of visual contact and the general difficulty in keeping track of a multitude of student screens meant that it was difficult to provide adequate feedback related to practical or physical exercises. As one teacher put it, “controlling the performance of the exercises was the biggest challenge” (Survey, Teacher 5). Likewise, even if students uploaded videos of their practical sport activities, these activities were limited by the type of sport and resources available to the students.

Furthermore, though the teachers here attempted to integrate numerous approaches and online tools, the students did not always perceive this as adequate. For some, they felt that the “students were probably better than the teachers” (Interview, Student 3) when it came to using or implementing online learning tools. Of course, newly hired or technologically inexperienced teachers may not communicate their personal situation to students, and students did not mention their awareness of teacher experience in the survey. Regardless of experienced levels, beyond the sudden disruption caused by the pandemic, it seems that these difficulties were due to a more general lack of training and support around e-learning.

3.3. Lack of Resources and Training

Difficulties and challenges in delivering online learning were not solely due to the sudden shift to online learning caused by the COVID-19 pandemic but broader, pre-existing structural and organisational issues. After all, as we note in our introduction, literature and research around online learning is hardly a new topic, yet many institutions were caught unprepared. As one student interviewee noted, it seemed like “everything must come from the professor’s motivation” (Interview, Student 4).

These gaps manifested themselves both in terms of resources and overall training or support. For many teachers, the lack of adequate technical equipment was a recurring challenge. This ranged from access to quality headsets, reliable internet connections, a second computer screen, and webcams, up to the availability of a unique and sufficiently equipped workstation at home or in the university setting. For example, one teacher reported challenges with their Moodle platform, whereby “when there were many students simultaneously in Moodle, the platform could not support it” (Survey, Teacher 11). Similarly, another teacher noted that they needed to adjust by using more “low bandwidth” activities that could accommodate participants with lower quality internet connections or technical set-ups.

Students experienced similar struggles as they mostly took part in the online courses on their laptops with integrated webcams and microphones. One student mentioned

that “it has to be noticed that not everyone has the same access to online teaching. Some people do not have the best hard- or software to attend online classes” (Survey, Student 4). The survey also illustrated how students predominantly work from informal spaces not explicitly conceived for work or learning, such as their student accommodations, dorms or shared flats, and, often, from their bedrooms. These irregular, sub-optimal learning situations led many students to express the wish for proper workstations provided by the university in order to complete their e-learning requirements in a safe, quiet, and technological suitable environment.

Beyond these technical or material difficulties, the absence of training regarding the delivery of online teaching was also highlighted. As already seen, some teachers were hired only shortly before they had to deliver online courses. However, the survey’s responses highlight the wish for specific education programmes on how to deliver online courses for teachers from both a technical and pedagogical perspective. Despite decades of widespread internet use and extensive literature on online learning [4,7,36,37], teacher responses suggest no systematic training or support around this topic. One teacher observed a need for “more training on actual e-learning, rather than videoconferencing” (Survey, Teacher 7). Another echoed this by highlighting the need for “permanent staff training” (Survey, Teacher 4) offers to refresh and update teacher knowledge. Certainly, as time passed, some universities developed resources or learning offers. Yet, the uptake of these offers also appeared to be contingent on the time and motivation of the teachers. It does not seem that these offers were purposefully integrated into teachers’ existing workload and schedules: “We had all those offers (. . .) that is all well and good, it’s a lot of information, and it adds to the already higher workload. That’s why I never really accessed that” (Interview, Teacher 1).

4. Discussion and Future Directions

Through a qualitative survey and structured follow-up interviews, the challenges and realities of e-learning during COVID-19 in university sport and physical education can be categorised into three major themes: a ‘sudden shift’, ‘striving for interaction’, and a ‘lack of resources and training’. These three major themes provide answers to the three research questions. ‘Sudden shift’ addresses how distance education has affected sport and physical education during COVID-19. ‘Striving for interaction’ discusses the few successes and the challenges that have accompanied the switch to online learning, while ‘lack of resources and training’ indicated the direction in which e-learning can be improved for sport and physical education during COVID-19. However, there are limits to the present study. The use of convenience sampling and the fact that a multitude of sport (sub)disciplines are present may prevent broader generalisation. Thus, though our sample represents a breadth of disciplines and experiences, we cannot necessarily detect differences or unique features within how specific disciplines experienced and integrated e-learning. Likewise, the geographic focus of this study is predominantly centred on (Western) Europe, and there is certainly room to further explore how e-learning in sport and physical education is experienced and delivered across different geographic, cultural and economic contexts. Finally, the slightly different wording of the student and teacher questions hindered direct comparability. Nonetheless, the findings here do allow us to highlight some the realities and challenges faced by this field when it comes to e-learning.

To some extent, our findings reinforce the conclusions of many previous studies, both pre- and post-pandemic. For example, the lack of resources and training for delivering online courses was already highlighted before the pandemic back in 2012 [6]. During the pandemic, other studies have also highlighted technological readiness and associated problems as a critical challenge [20,38,39]. Yet, it is worth re-emphasising that challenges regarding technology and innovation in universities have been identified in the past [40,41], and our results show that many of institutions have not been keeping up with the overall digitalisation of society and its technological advances. One institution even, paradoxically, reduced its IT staff capacity and provided no on-campus IT support during the pandemic. When looking into our responses, we see that the teachers who had not delivered on-

line courses before the pandemic had more difficulties. This could have been avoided if universities had provided adequate training sessions for the teachers and appointed dedicated support staff. Concretely, this could mean workshops for teachers where experts introduce relevant methods and tools or university working groups where teachers can exchange experiences and practices. In short, education and support offers must address the technical and pedagogical facets of e-learning. Given the inherently interactive nature of sport and physical education, there may even be a greater need for such exchange and mutual support, as many teachers struggle to convert physical, hands-on content to the online setting. In this sense, we re-emphasise the need for institutions to provide proactive, targeted support to teachers as far as online teaching methods and tools are concerned. Thus, we echo others' calls for workshops or other opportunities to develop e-learning capabilities [39]. Additionally, these offers must be integrated into existing teacher workloads instead of being a separate activity that adds to already overburdened teaching staff. In turn, this intentional, integrated, proactive development of online teaching capacities can help improve course delivery and student satisfaction, especially regarding student interaction and motivation.

Arguably the most explicit theme to come from our students was a wish for various e-learning methods and the need for a certain level of entertainment to be satisfied with online courses—a theme which has been noted previously in the literature [25,42,43]. Though some teachers may balk at the notion that they now must be entertainers, we must be mindful that students face numerous distractions in their home environments, including roommates, children, animals, appliances, exterior noise, and the presence of multiple devices. Teachers, thus, must actively try to cut through these distractions and capture student attention. This also means that the old-fashioned 'chalk and talk' method characterised by lecture-driven, slide-based presentations is ineffective, especially when translated to the online setting. Our university and others make distinctions between lecture-based courses and more interactive seminars. Yet, as our results show, these categories do not necessarily hold in the online context, especially when it comes to live, synchronous teaching. Teachers must become more creative in their way of teaching if they want to deliver online courses successfully. Monotonous delivery and approaches, both within and between classes, are hugely detrimental to student engagement.

Ultimately, though, perhaps the defining finding here is that, even with the ideal technical set-up and quality training, e-learning is seen as a sub-optimal, emergency solution when it comes to the sport and physical education field. In fact, others have already argued that online teaching during the pandemic should be understood as "remote emergency teaching" and cannot be compared to purposefully developed e-learning programmes [44]. After all, the sudden shift caused by the pandemic did not afford universities the necessary time and resources they would ideally use if they designed e-learning offers under normal circumstances. Additionally, "students' acceptance and use of e-learning is much more complicated and certainly unavoidable than that of normal conditions" [20]. Nonetheless, our results highlight the limited potential of e-learning in interactive or hands-on subjects such as sport and physical education. Some students recognised or even welcomed the potential and flexibility provided by e-learning for more theoretical or technical subjects. The ability to connect with fellow learners across the globe was also seen as a plus. However, predominantly, students and teachers both felt that presence teaching was a superior form of learning, especially when courses require physical interaction, exchange and discussion. This was echoed by teachers, who felt that "for practical classes, e-learning is more difficult to use" (Survey, Teacher 7) and that they prefer to teach interactive courses in person. In this respect, our participants very much confirm that face-to-face activities are the preferable learning delivery modality for sport and physical education [19]. Additionally, irrespective of the nature of the class, the spontaneous, social interactions presented by face-to-face learning were sorely missed. Some students were rather blunt in their assessments, with one stating e-learning "kills the very essence of education" (Survey, Student 11) while another characterised online "field trips" as "shitty" (Interview, Student 2).

Certainly, we recognise and support calls for innovation and implementation of online education good practices in sport and physical education [19,25,45] and other contexts [46]. However, we will end by encouraging educational institutions to devise and invest in ways to increase the capacity and resilience of their face-to-face tertiary education in sport and physical education. Many potential global shocks lurk around the corner, from future pandemics, new COVID-19 variants, and climate change [47]. Though technology and online learning have an immense role in addressing and working around these challenges, educational institutions must invest in ensuring the sustainable, safe, resilient provision of face-to-face teaching. Not only are some subjects, such as sport and physical education, nearly impossible to faithfully deliver in an e-learning context, but in-person interaction remains a crucial component of effective learning [5] and is intimately related to the wellbeing, health, and satisfaction of students [48]. Thus, the challenge ahead is to ensure that we are able to capitalise on the potential of technology while also investing in the quality, safety, health, and sustainability of our face-to-face teaching environments. After all, as one student succinctly put it, we have learned two things from COVID-19: “it is unreplaceable to be in class, and if being in class is not possible, online courses are a good option” (Interview, Student 3).

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