

The effect of online teaching of inclusive physical and sport education on the university students' self-efficacy

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Abstract:

The objective of the study was to determine, how online teaching affect a students' self-efficacy towards inclusion pupils with disabilities in general physical and sport education. 46 university students (33 males and 13 females, mean age 20.96±0.87 years) of the Faculty of Physical Education and Sport of Comenius University in Bratislava participated in the study and completed one-semester course of inclusive physical and sport education (IPSE) through online teaching between February and May 2022. SE-PETE-D was used to evaluate students' self-efficacy. 13-weeks online teaching of IPSE significantly increased the level of university students' self-efficacy towards inclusion of pupils with physical disability (W=1665, p=0.000, r=0.418) as well as pupil with visual impairment (W=1226, p=0.000, r=0.587). Increased self-efficacy has been confirmed in each IPSE area, performing fitness activities, teaching skills, and playing sports games.

Keywords: Self-efficacy, university students, online teaching, inclusive physical and sport education.

Information and communication technology (ICT) and e-learning systems are essential factors in carrying out university activities. E-learning has several definitions, but in simplified terms it is the use of information and computer technologies and systems to create and design learning experiences, or a concept that uses electronic media to deliver distance learning and education. E-learning thus refers to the transfer of knowledge and learning using a variety of electronic devices. There is also a difference between traditional and online learning in terms of the main sources of information, assessment, or quality of learning. In traditional education, students are evaluated only by teachers who are the main source of information, and the quality of education depends largely on the axis of their skills. In online education, assessment can be done based on tools and systems. Students can get information from various documents uploaded to the platform and the quality of education is also influenced by the quality of the teachers' training in the use of technology, as well as their teaching style (Bendíková, 2017; Fobelová et al., 2019; Coman et al., 2020; Bendíková, Plaščáková Špringrová, 2021).

There are indeed countless technologies available for online learning, but some of them cause a lot of difficulties and complications. These problems associated with modern technology range from download errors to installation problems, login problems, audio and video problems, etc. It can also be a problem that the student finds this type of learning boring and uninteresting. Online learning provides so much time and flexibility that it is sometimes paradoxically difficult to make time for it. Sometimes the content is only theoretical and does not allow students to acquire practical knowledge. However, solutions can always be found to eliminate these difficulties. For example, technical problems can be solved by playing video lectures, testing the content, it is also good to always have a plan B in place so that the teaching process can't be disrupted by anything can't put a damper on the learning process. Lack of focus can be solved by time limits to keep students alert and attentive. Online courses should be designed in such a way that they are creative, interactive, relevant, and student-centered, and group-based (Dhawan, 2020).

To curb the spread of COVID-19, universities around the world have rapidly brought various courses online, with e-learning becoming a mandatory teaching and learning process for educational institutions. It is not just publishing teaching materials online. Teachers needed to organize content and teaching methods so that students do not feel isolated and lonely in the learning process. Therefore, adequate knowledge and skills of teachers must be ensured, as well as ICT equipment. According to research conducted in 2020 across 62 different universities, 86.7% of students reported that classes were moved to an online space. As a result, several different forms of online lectures have emerged. Real-time video calls were the most dominant form, followed by asynchronous forms (sending presentations to students, video recording, and written communication). The highest satisfaction with these forms of instruction was found in Oceania, North America, and Europe, followed by Asia and South America, while students from Africa were the least satisfied, which may be due to the unevenly developed ICT infrastructure across the continent, where many higher education institutions were unable to deliver lectures online and many students had limited access to the internet (Aristovnik, et.al., 2020).

The inclusive physical and sport education (IPSE) course is by its nature a practical course in which students of the faculty of physical education and sport are introduced to sport activities performed by athletes with disabilities. At the time of the COVID-19 pandemic, this subject, like all other practical subjects, had to be taught online, without students attending classes in a gym hall or sports hall environment. Several research have been conducted to find out the effect of IPSE teaching on increasing the level of self-efficacy. For example, Foley et

al. (2020) examined the effects of a 1-week intensive sports camp for students with visual impairments on pre-service PSE teachers' self-efficacy toward teaching students with intellectual disabilities, physical disabilities (PD), and visual impairments (VI) in PSE settings. The findings indicated that the participants' self-efficacy scores toward teaching students with these three types of disabilities significantly increased after completing the program. This finding corresponding with Neville et al.'s (2019) study, which found that pre-service PSE teachers' levels of self-efficacy increased after they participated in a 1-day inclusive PSE program (6 h; theoretical and practical). Through this research, we wanted to find out how the online form of teaching the IPSE course affects the level of self-efficacy in physical and sport education (PSE) university students.

Research objective and hypothesis

The objective of the study was to determine, how online teaching affect a students' self-efficacy towards inclusion pupils with disabilities in general physical and sport education. We hypothesize that online teaching of inclusive physical and sport education will have an insufficient impact on university students' self-efficacy towards inclusion of pupils with disabilities in inclusive physical and sport education.

Methods

46 university students (33 males and 13 females, mean age 20.96 ± 0.87 years) of the Faculty of Physical Education and Sport of Comenius University in Bratislava participated in the study. The students of the 2nd year of the bachelor's degree completed the course of IPSE through online teaching between February and May 2022. The course was taught for 13 weeks with a duration of 90 minutes. During the course, students received theoretical knowledge in the field of IPSE prioritizing the inclusion of students with physical disability and visual impairment among able-bodied students. IPSE is a practical subject that is taught mainly in the gym hall. However, our classes were taught entirely online without contact form of teaching in the gym hall as restrictions were still in place due to the COVID-19 pandemic. At the beginning of the summer semester (February 2022) we distributed the SE-PETE-D questionnaire to the students, which measures the level of their self-efficacy. The questionnaire was used to determine how confident the students were in their position as a teacher to include a student with a disability in their general PSE lessons. The questionnaire included a detailed description of the pupil with PD and VI, so that the students could better imagine having such a pupil in an IPSE lesson with a group of able-bodied pupils. This was

followed by an online lesson where students received knowledge through slides and videos. In the last lesson of the IPSE course (May 2022), before the written exam, the students again completed the same questionnaire.

SE-PETE-D (*Self-Efficacy Scale for Physical Education Teacher Education Majors towards the Children with Disabilities*) measures PSE teacher majors' self-efficacy toward including students with intellectual disabilities, physical disabilities, and visual impairment in PSE frameworks, including performing fitness activities, teaching skills, playing sports games and (Block et al., 2013; Kudláček, Baloun, Ješina, 2020). For our investigation we used the part of including student with PD and VI. Below is an example of the vignette for a pupil with PD:

Peter is a primary school pupil and has an injured spinal cord. He cannot walk and therefore uses a wheelchair. Peter likes the same sports as his classmates, but he is not very good at playing a particular game. Although he can move himself in a mechanical wheelchair, he is slower than his classmates and gets tired quickly. In volleyball, he can serve and pass, but not far enough for the ball to go over the net. He can catch balls that are aimed directly at him. However, he does not have the upper body strength to drive the ball to the basket and score when playing basketball. Because he has paralysis in his lower extremities, he cannot kick a soccer ball. He can, however, push the ball in front of him with his wheelchair.

Following the vignette, three sets of questions (statements) with varying numbers were presented focusing on how confident the respondent felt in the specific context of conducting fitness testing (3–4 questions), teaching sport skills (3–5 questions), and organizing the actual playing of a sport (3–4 questions), totalling 10–12 questions in each scale. Demographic questions were included at the end of the instrument. An example of a fitness testing question was: *How confident are you in your ability to keep Peter on task during fitness testing?* An example of a question targeting teaching a sport skill was: *How confident are you in your ability to modify the actual skills to help Peter when teaching sport skills?* Finally, an example of a question targeting organizing the actual sport with the class was: *How confident are you in your ability to modify the rules of the game for Peter?* University students rated their degree of confidence to complete these situational-specific general PSE activities for each of the targeted disabilities on a scale of 1 (no confidence) to 5 (complete confidence). The data were evaluated by mean score (Mean) and standard deviation (\pm SD). The differences of the self-efficacy level between the input and output values were detected by using Wilcoxon-test and coefficient r .

Results

At the beginning of the semester prior to taking the IPSE course, we registered the lowest self-efficacy rate for students in statement no. 9 (2.80 ± 1.06 point). In inclusive PSE, students were least confident in providing a safe environment for a pupil with PD during a sports game. On the contrary, the highest level of self-efficacy was declared by students in statement no. 8 (3.48 ± 0.98 point), in which they trusted themselves the most in instructing classmates in assisting a pupil with PD in learning game skills. After completing a semester-long online IPSE class, students demonstrated the lowest level of self-efficacy in statement 1 (3.56 ± 0.71 point), where they were least confident in setting up individual goals for the pupil with PD during motor performance testing. On the other hand, the highest level of self-efficacy was declared by the eighth statement (4.08 ± 0.76 point) at the end of the semester where they were most confident in instructing their classmates in assisting the pupil with PD in learning game skills. The overall self-efficacy of the students averaged 3.13 ± 0.67 scores at the beginning of the semester and 3.83 ± 0.57 scores at the end of the semester. Significant differences were demonstrated in each self-efficacy statement as well as in overall self-efficacy at the end of the semester in the group of university students (Table 1). It can be concluded that online IPSE teaching, even though hands-on instruction in the gym was not applied, significantly increased the students' self-efficacy level towards inclusion of a pupil with PD.

Table 1 Self-efficacy toward inclusion of pupils with PD in PSE classes

Statement No.	Input values	Output values	Wilcoxon-test		Coefficient <i>r</i>
	Mean/ \pm SD		<i>W</i>	<i>p</i>	
1	2.91 ± 0.81	3.56 ± 0.71	1697	0.000	0.392
2	3.13 ± 0.75	3.79 ± 0.71	1680	0.000	0.412
3	3.17 ± 0.99	3.96 ± 0.85	1702	0.000	0.394
4	3.06 ± 0.97	3.98 ± 0.81	1624	0.000	0.458
5	3.02 ± 0.88	3.62 ± 0.79	1775	0.001	0.338
6	3.34 ± 0.97	3.75 ± 0.93	1922	0.038	0.211
7	3.11 ± 0.95	3.89 ± 0.83	1702	0.000	0.401
8	3.48 ± 0.98	4.08 ± 0.76	1809	0.002	0.324
9	2.80 ± 1.06	3.65 ± 0.84	1684	0.000	0.406
10	3.28 ± 1.09	4.04 ± 0.79	1758	0.001	0.371
Overall self-efficacy	3.13 ± 0.67	3.83 ± 0.57	1665	0.000	0.418

Regarding the inclusion of the pupil with VI and the effect of online teaching on the level of self-efficacy, we registered the lowest level of self-efficacy in statement no. 7

(2.39±0.95 point) at the beginning of the semester before the students took the IPSE course. In IPSE, students were least confident in providing a safe environment for a student with VI during the match. On the contrary, the highest level of self-efficacy was declared by students in statement no. 2 (3.25±0.84 point) in which they were most confident in instructing of classmates in assisting the pupil with VI during motor performance testing. After completing the semester-long online IPSE education, students demonstrated the lowest level of self-efficacy in statement no. 7 (3.51±0.88 point), where they were least confident in providing a safe environment for a pupil with VI during a match. On the other hand, the highest level of self-efficacy was declared by the second statement (4.08±0.74 point) at the end of the semester, where they trusted themselves the most in instructing their classmates in assisting the pupil with VI during motor performance testing. The overall self-efficacy of the students averaged 2.90±0.73 scores at the beginning of the semester and 3.87±0.60 scores at the end of the semester. Significant differences were demonstrated at the end of the semester in the group of university student in each self-efficacy statement as well as in total self-efficacy (Table 2). It can be concluded that online IPSE teaching, even though hands-on instruction in the gym was not applied, significantly increased their self-efficacy level toward the inclusion of a pupil with VI.

Table 2 Self-efficacy toward inclusion of pupils with VI in PSE classes

Statement No.	Input values	Output values	Wilcoxon-test		Coefficient <i>r</i>
	Mean/±SD		<i>W</i>	<i>p</i>	
1	2.88±0.90	3.81±0.79	1436	0.000	0.481
2	3.25±0.84	4.08±0.74	1460	0.000	0.464
3	2.91±0.94	3.91±0.85	1407	0.000	0.487
4	2.70±0.96	3.74±0.79	1374	0.000	0.509
5	3.02±1.05	3.95±0.80	1464	0.000	0.445
6	2.97±0.93	3.83±0.81	1455	0.000	0.442
7	2.39±0.95	3.51±0.88	1361	0.000	0.521
8	3.11±0.93	4.02±0.76	1431	0.000	0.472
9	2.86±1.01	4.00±0.78	1360	0.000	0.534
Overall self-efficacy	2.90±0.73	3.87±0.60	1226	0.000	0.587

By analysing each specific area of the PSE process in the inclusion of a student with PD, we found that university students' self-efficacy levels were around 3.0 points (3.04-3.24 score) before one-semester IPSE course and around 4.0 points (3.82-3.84 score) after one-semester IPSE course. Self-efficacy across all areas of the IPSE increased significantly for students at the end of the semester with the inclusion of a student with PD (Figure 1).

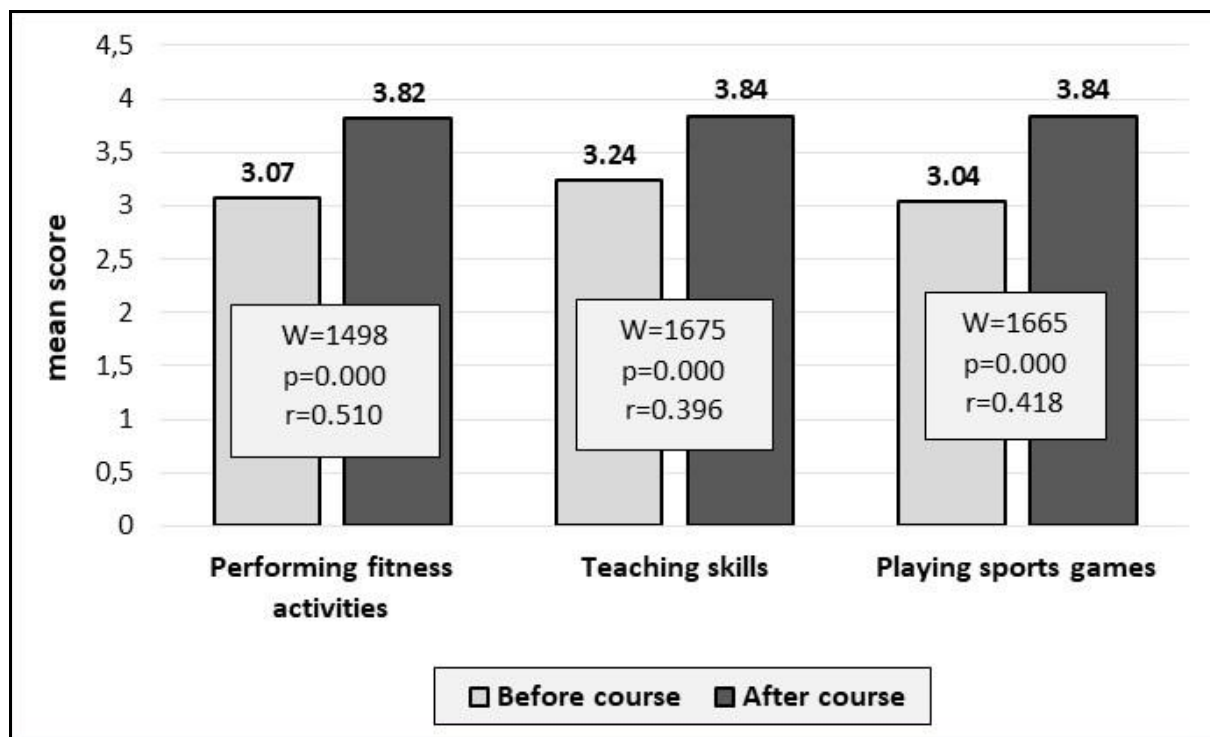


Figure 1 Specific areas of PSE toward inclusion a pupil with PD

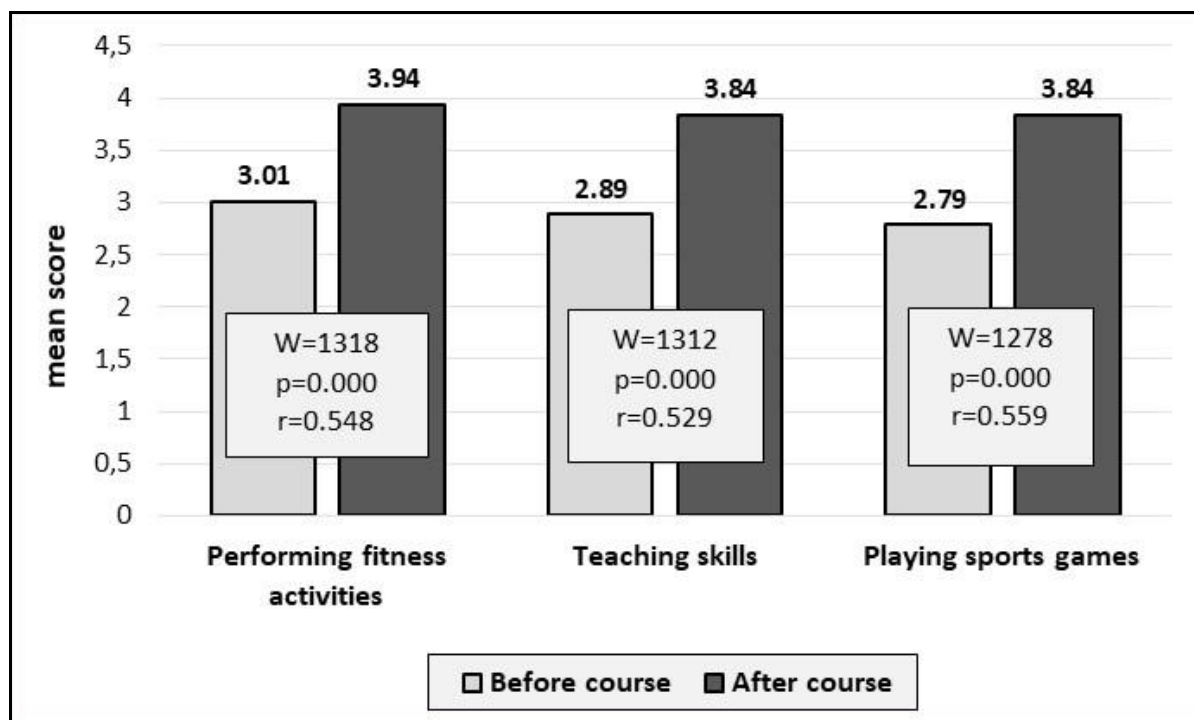


Figure 2 Specific areas of PSE toward inclusion a pupil with VI

Analysing each specific area of the PSE process when including a student with VI, we found that university students' self-efficacy levels before the IPSE course were around 3.0 points (2.79-3.01 scores) and around 4.0 points (3.84-3.94 scores) at the end of the IPSE

course. Self-efficacy in all areas of the IPSE increased significantly for students at the end of the semester with the inclusion of a student with VI (Figure 2).

According to the results of our research, we reject the hypothesis where we hypothesized that online teaching of inclusive physical and sport education will have an insufficient impact on university students' self-efficacy towards inclusion of pupils with disabilities in inclusive physical and sport education. Although IPSE is a purely practical subject that is taught in the gym hall, by teaching online without face-to-face education, we were able to significantly increase the university students' self-efficacy towards inclusion of pupils with physical disability and visual impairment in inclusive physical and sport education.

Discussion

Practical intervention programs are often provided as a means of improving pre-service teachers' professional skills (Taliaferro, Harris, 2014). The literature shows that intervention programs based on social cognitive theory positively impact teachers' levels of self-efficacy (Martin et al., 2009) and professionalism in the workplace (Egido et al., 2013). Intervention programs designed specifically to improve pre-service PSE teachers' self-efficacy and skills represent an important way of addressing the weaknesses in current education programs for pre-service PSE teachers who wish to teach general PSE classes for students with disabilities (Wang et al., 2020; Tindall, Culhane, Foley, 2016; Barney, Pleban, 2006).

The objective of the present study was to determine, how online teaching affect a students' self-efficacy towards inclusion pupils with disabilities in general physical and sport education. Since the subject of IPSE is taught in the gym hall, we assumed that online teaching (distance learning) of inclusive physical and sport education will have an insufficient impact on university students' self-efficacy towards inclusion of pupils with disabilities in inclusive physical and sport education. The important role that pre-service teachers' level of self-efficacy plays in including students with disabilities in general PSE classes has generated a large amount of research on how pre-service PSE teachers' levels of self-efficacy towards inclusion can be positively influenced. Based on the results of our research, we concluded that the online teaching of IPSE significantly increased the level of university students' self-efficacy towards inclusion of pupils with physical disability as well as pupil with visual impairment. Some researchers, e.g., the authors of (Jovanovič et al., 2014; Tindall, Culhane, Foley, 2016) assert that academic preparation is one of the most influential factors related to

the self-efficacy of pre-service PSE teachers towards teaching pupils with disabilities. Taliaferro et al. (2015) indicated that despite significant increases in pre-service PSE teachers' self-efficacy beliefs during the semester, no significant differences were evident among participants who had completed a 16-week adapted physical education course and those who had not. Few studies have investigated the effectiveness of a short-term intervention program. One example is Layne and Blasingame's (2018) study which investigated the efficacy of a short-term intervention designed to provide pre-service PSE teachers who attended an educational program with practical one-to-one experience of teaching students with profound and severe disabilities over a 5-week period. The results indicated that the pre-service PSE teachers reported having insufficient experience of teaching this cohort beforehand. However, the results show that participants reported gaining valuable experience via their one-on-one instruction and a greater appreciation for teaching students with disabilities. In the present study, after 13-weeks of educational program, increased self-efficacy has been confirmed in each IPSE area, performing fitness activities, teaching skills, and playing sports games. In summary, these studies suggest that providing more practical opportunities for pre-service PSE teachers to work with students with disabilities can play a critical and valuable part in successful inclusive educational programs.

Conclusion

Since the subject of IPSE is taught in the gym hall, we assumed that online teaching (distance learning) of inclusive physical and sport education will have an insufficient impact on university students' self-efficacy towards inclusion of pupils with disabilities in inclusive physical and sport education. Based on the results of our research, we concluded that the online teaching of inclusive physical and sport education significantly increased the level of university students' self-efficacy towards inclusion of pupils with physical disability as well as pupil with visual impairment. Increased self-efficacy has been confirmed in each IPSE area, performing fitness activities, teaching skills, and playing sports games.

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Abstrakt

Vplyv online výučby inkluzívnej telesnej a športovej výchovy na sebahodnotenie vysokoškolských študentov

Dagmar Nemček

Cieľom výskumu bolo zistiť, ako online vyučovanie ovplyvňuje sebahodnotenie vysokoškolských študentov vo vzťahu k inklúzii žiakov so zdravotným postihnutím v telesnej a športovej výchove. Výskumu sa zúčastnilo 46 študentov (33 mužov a 13 žien, priemerný vek $20,96 \pm 0,87$ rokov) Fakulty telesnej výchovy a športu Univerzity Komenského v Bratislave, ktorí v období od februára do mája 2022 absolvovali jednosemestrálny predmet inkluzívnej telesnej a športovej výchovy (ITŠV) prostredníctvom online výučby. Na hodnotenie sebahodnotenia študentov bol použitý SE-PETE-D dotazník. Trinásťtýždňová online výučba ITŠV významne zvýšila úroveň sebahodnotenia vysokoškolských študentov vo vzťahu k inklúzii žiakov s telesným postihnutím ($W=1665$; $p=0,000$; $r=0,418$), ako aj žiaka so zrakovým postihnutím ($W=1226$; $p=0,000$; $r=0,587$). Významne zvýšené sebahodnotenie sa potvrdilo vo všetkých oblastiach ITŠV, akými sú testovanie všeobecnej pohybovej výkonnosti, osvojovanie si herných zručností, ako aj pri realizácii športových hier.

Kľúčové slová: Sebahodnotenie, vysokoškolskí študenti, online výučba, inkluzívna telesná a športová výchova.

doc. Mgr. DAGMAR NEMČEK, PhD. (*1977) – zaoberá sa inkluzívnou telesnou a športovou výchovou, telesnou a športovou výchovou na špeciálnych školách a športom zdravotne postihnutých.