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Teaching through Turbulence: Post-Pandemic Pedagogical Shifts in Physical Education Teacher Training

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Abstract

This study explores the resilience and adaptability of physical education (PE) teacher educators in Israel during and after the COVID-19 pandemic. Set within a technologically advanced, centralised education system marked by cultural and security complexities, the research offers a unique perspective on how teacher education evolves under crisis. Key findings show a strong preference for returning to traditional face-to-face instruction post-pandemic, with 85% of educators maintaining existing grading systems and 40–50% reporting no change in evaluation methods. However, subtle but lasting shifts emerged, particularly an increasing emphasis on theoretical content and self-directed learning in sport and field experience courses. Using a mixed-methods triangulation design, the study combined quantitative surveys from 50 PE teacher educators with qualitative insights from 15 in-depth Zoom interviews. Quantitative data addressed demographics, teaching practices, and evaluation methods, while qualitative data focused on perceived changes and future outlooks. Analyses were conducted using SPSS for the survey data and thematic analysis for interviews. While temporary adaptations, such as hybrid teaching and modified assessment, were implemented during the pandemic, the post-crisis trend favours a return to pre-pandemic norms, with limited structural transformation. Nevertheless, the growing focus on independent learning and theoretical depth indicates evolving pedagogical priorities. These findings underscore the importance of flexible policy frameworks and continuous professional development to support sustainable innovation in teacher education. To ensure resilience in the face of future disruptions, training programmes should intentionally incorporate hybrid models and student-centred approaches that balance traditional and emerging practices.

Keywords:
evaluation methods, pedagogical innovation, quality education, resilience during crisis, student engagement

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Introduction

Following the outbreak of the COVID-19 pandemic, education systems were forced to rapidly transition from on-campus, face-to-face learning to online delivery (Radha et al., 2020) – thus posing significant challenges for the higher education community worldwide (Crawford et al., 2020) and leading to substantial changes in teaching and learning methods (Liguori & Winkler, 2020). At the onset of the pandemic, emergency measures were implemented, with higher education systems primarily focused on survival amid the considerable uncertainty that characterised the crisis (Carugati et al., 2020). However, with the pandemic – and related social restrictions – lasting more than two years, higher education systems needed to be both flexible and resilient; in turn, educational leaders and decision-makers

were forced to introduce effective and sustainable changes, for both the present (i.e., during the pandemic) and the uncertain future (Cutri et al., 2020; Nandy et al., 2021).

These global shifts in education during the pandemic were also addressed in international frameworks. UNESCO's *Education Response to COVID-19* emphasised the importance of ensuring educational continuity, equity, and innovation across all levels of learning during times of crisis. In parallel, Sustainable Development Goal 4 (SDG 4) highlights the importance of inclusive and equitable quality education, as well as the promotion of lifelong learning opportunities for all. These goals became increasingly urgent during the pandemic's disruptions. Positioning teacher education within these global agendas underscores the need for systemic adaptability and resilience to meet both immediate and long-term educational challenges.

The COVID-19 pandemic has presented a unique opportunity to examine the adaptability and resilience of teacher education systems (Surendran et al., 2023). Recent meta-analyses have highlighted significant developments in the teaching and evaluation methods employed in physical education (PE), particularly in the context of integrating innovative pedagogies (e.g., Shen & Shao, 2022; Wang et al., 2025). Beyond the adoption of digital technologies such as fitness apps and virtual platforms, researchers have examined the shift toward student-centred instructional strategies, including game-based learning, inquiry-based models, and cooperative learning (Casey et al., 2017; Chandiok & Kukreja, 2025). These approaches are often associated with higher levels of student engagement and motivation, as well as improvements in skill acquisition and affective outcomes. Furthermore, alternative assessment strategies, such as portfolio assessments, peer evaluations, and video-based performance analysis, have gained traction as valid tools for formative and summative evaluation in PE (Herrero-González et al., 2024). These findings underscore the importance of aligning teaching and assessment methods with learning objectives to promote holistic development in PE contexts (Alhassan & Ibrahim, 2024).

The COVID-19 pandemic presented substantial challenges to PE instruction and evaluation, necessitating rapid adjustments in pedagogy. During lockdowns and remote learning periods, PE teachers were required to shift away from traditional in-person activities and adopt flexible instructional and assessment frameworks that could be implemented online (Varea & González-Calvo, 2021). Studies report a widespread reliance on asynchronous video tasks, online journals, and self-assessment tools to monitor student progress and encourage physical activity at home (Merino-Campos & Del-Castillo, 2025). However, the effectiveness of these strategies varied widely, depending on students' access to space, technology, and family support. In particular, the absence of embodied interaction and immediate feedback posed limitations to authentic assessment in PE, raising concerns about the validity and equity of remote evaluation methods (Herrero-González et al., 2024).

Teacher training has emerged as a critical factor in the successful implementation of evolving teaching and assessment methods in PE. Recent reviews emphasise that both pre-service and in-service teacher education must address not only digital competencies but also pedagogical adaptability and assessment literacy (Martinez-Rico et al., 2021). However, PE teacher education programmes often fall short in equipping educators with practical experience in using diverse pedagogical models or alternative assessments. Compared to general teacher

education, which has seen broader institutional support for incorporating 21st-century skills and reflective teaching frameworks, PE-specific training still lags, particularly in the integration of embodied pedagogies within digital or hybrid environments (Isgren Karlsson, 2024; Goodyear & Casey, 2015). Bridging this gap requires systemic changes in curriculum design, emphasising experiential learning, critical reflection, and adaptive teaching strategies tailored to the unique demands of PE.

Imran et al. (2023) reviewed the geographical distribution of published articles, finding that Australia, the United States, and the United Kingdom led in the number of studies. This indicates a global interest in the impact of COVID-19 on educational practices. Nevertheless, they recommended that other countries should also join this field of study to enrich the global knowledge and its practical implications. Their study's results underscore the *ongoing evolution of educational practices in response to the pandemic* and the importance of adapting teaching methods to enhance student learning outcomes.

The current study examines the methods of teaching and evaluation used in higher education over three consecutive semesters, starting before the COVID-19 crisis. Specifically, this research focuses on a PE teacher training program, comprised of four main course clusters: (1) Mandatory *theoretical courses*, such as anatomy, physiology, and psychology; (2) *sports courses*, such as basketball, swimming, and dancing; and (3) *field experience*, i.e., learning (how to teach) by doing. In an earlier study (Fox et al., 2023), student grades were examined across four consecutive semesters, spanning the pre-pandemic to post-pandemic period. Although it was hypothesised that changes to teaching methods during the pandemic would affect student grades, unexpectedly, the changes observed in the four clusters were minimal to none. The aim of the current study, therefore, is to conduct an in-depth examination of how teacher educators perceive and respond to assessment goals and methods and to determine whether the pandemic has affected their evaluations and grading practices.

Over the past three decades, changes have been seen in the goals and methods of student assessments, evaluations, and grading in higher education in general and teacher education programmes in particular (Harland & Wald, 2021)—especially since the introduction of the Bologna Process (see review by Pereira et al., 2016). These have been influenced by the content and context of the teaching and learning environment and culture, as well as the participants' characteristics, including age, social-cognitive, physical, and emotional needs and competencies (e.g., Fernandes & Flores, 2022). Student evaluation has four main functions: (1) *formative* (also referred to as assessment for learning), used for the improvement and development of an on-going activity (Prashanti & Ramnarayan, 2019). It should therefore facilitate learning while fostering strong, active partnerships between students and their instructors (Brown, 2019); (2) *summative*, used for accountability, certification, or selection (Ketonen & Nieminen, 2024); (3) *psychological* or *sociopolitical*, used for motivating students to increase their learning efforts and awareness (Ruziyevna, 2025); and (4) *administrative*, used to exercise authority (Lundahl et al., 2017).

Reviews that examine the prevalence of assessment methods in PE in schools and teacher education (e.g., Moura et al., 2021) assert that while more authentic forms of assessment in PE have been seen over the past three decades, the extent to which alternative assessment methods have become standard practice in PE teaching is yet to be

fully determined. Moreover, Moura et al. (2021) conclude that PE teachers continue to use assessments solely as a grading tool. However, they lack the necessary skills for effectively applying formative assessments in PE. Such conclusions, which were drawn regardless of the pandemic, raise serious concerns about teacher education in general, particularly distance learning in particular.

The topic of adaptation to change during a global crisis within PE teacher training remains relatively underexplored in the academic literature. To the best of our knowledge, its presence is limited and has not been comprehensively analysis. This underscores the importance of the current study. First, it offers an opportunity to examine the nature of adaptation, identify key change agents, highlight areas of resistance, and recognise early indicators of transformation. Second, PE is inherently connected to broader teacher education processes. Shifts —or stagnation—in one area of teacher education inevitably affect developments in others. Therefore, any further research in this area enhances the overall understanding of teacher education systems. Third, the unique characteristics of PE as a practice-oriented discipline merit focused investigation, positioning it as a valuable case study.

Hence, based on this review of the literature, the aim of this study was threefold,: (1) examining how teacher educators adapted their teaching and student evaluation methods in light of the changes imposed by the pandemic; (2) analysing relationships between the perceptions and actions of teacher educators regarding student evaluations and grades; and (3) investigating what methods, practices, and insights these teacher educators have adopted, or recommend adopting in the future regarding changes to assessments, grading, and evaluations, following lessons learned from the pandemic. Student perspectives were not included in this study; future research should consider them.

Methodology

A mixed-methods concurrent triangulation design was employed in this study, combining quantitative and qualitative data collection and analysis concurrently. This approach enables real-time integration, immediate cross-validation, and a more comprehensive understanding of the research question by comparing and integrating findings from both methods. The concurrent design enhances the depth and breadth of insights, as it allows different perspectives to inform one another during the research process (Almeida, 2018). In contrast to sequential designs, which may delay integration and limit analytical depth, the concurrent approach offers more robust and timely outcomes. This methodology aligns with the principles outlined by Bell et al. (2022), which emphasise the advantages and implications of concurrent mixed methods designs in research.

A mixed-methods design incorporating interviews, open-ended questionnaires, and structured questionnaires offers a robust research approach, providing a comprehensive understanding of complex phenomena. This triangulation of methods enables researchers to leverage the strengths of both qualitative and quantitative approaches while mitigating their respective limitations (Clark & Clark, 2022). Interviews provide rich, contextual data, allowing for in-depth exploration of participants' experiences and perspectives (Bryman, 2016). Open-ended questionnaires capture a broader range of responses, potentially revealing unexpected insights (Patton, 2023). Structured questionnaires facilitate efficient data collection from larger samples, enabling statistical analysis and enhancing generalisability (Young, 2015). This combination of methods enhances the

validity and reliability of findings through methodological triangulation (Noble & Heale, 2019). It allows for both the exploration of nuanced, subjective experiences and the identification of broader patterns and trends. In educational research, such comprehensive methodologies are particularly valuable for informing evidence-based practices and policies.

Quantitative Research

Participants

The quantitative survey was completed by 50 teacher educators (29 females, 21 males) from a teacher education college in Israel. The participants were aged 39–64 (M = 56; SD = 3.5) and included 17 who taught theoretical courses, 19 who taught sport courses, and 14 who served as pedagogical instructors. More than half of the respondents (n = 27) had been teaching at the college for over 15 years, and 40 were tenured faculty members. We employed a proportional stratified sampling approach, selecting faculty members from each lesson type in proportion to their representation within the college's permanent staff. The academic programme comprises four main types of courses, each characterised by distinct teaching approaches and instructional responsibilities. *Mandatory theoretical courses* are core academic classes taught by lecturers who typically work with large student cohorts. These courses focus on foundational theoretical knowledge, including subjects such as Introduction to Psychology, Introduction to Physiology, Anatomy, and Sociology.

In contrast, *elective theoretical courses* are also lecture-based but involve smaller groups of approximately 40 students. These courses enable students to select topics aligned with their interests and academic goals from a range of options offered by the programme. Another significant component of the curriculum comprises *sport courses*, which are both practical and experiential. In these courses, instructors teach the technical and pedagogical aspects of various sports through active student participation. Students both experience and learn how to teach specific sports, such as soccer, basketball, dance, gymnastics, and track and field. Finally, *pedagogical instructors*, who serve as field experience supervisors, play a critical role in guiding students during their teaching practicum in schools. These instructors mentor students, observe their classroom teaching, and support them in applying theoretical knowledge to practical teaching skills, thereby bridging the gap between academic study and professional practice.

Research Tool

The questionnaire (see Appendix 1) was created by the authors of the study (four experts in research methodology, an expert in sport pedagogy, and a statistician) and comprised the following seven sections: (1) *demographic background data*; (2) *changes to syllabi* (no changes were introduced / most changes were introduced during the distance learning / most changes were introduced during - on-campus learning after the pandemic); (3) *frequency of use of various teaching methods* (such as flipped classes and simulations) that the respondents were asked to rate on a 6-point Likert-like scale, from 0 (never) to 5 (very often); (4) *frequency of use of various evaluation methods* (such as assignments and reports) that the respondents were asked to rate on a 6-point Likert-like scale, from 0 (never) to 5 (very often); (5) *attitudes towards grading* that the respondents were asked to rate on a 5-point Likert-like scale, from 1 (stricter) to 5 (more lenient); (6) *perceptions of various teaching-learning characteristics* when comparing distance learning and on-campus (no differences between the two methods; one is more advantageous than the other); and (7) *post-pandemic teaching methods* (I teach on

campus as I did prior to the pandemic / I combine on-campus and distance learning / the entire course is taught via distance learning). The questionnaire underwent a content validity procedure, in which three pedagogical instructors and three lecturers affiliated with the managerial team reviewed and approved the clarity and relevance of the questionnaire items to the research purposes. In addition, Cronbach's alpha was assessed for each item in the questionnaire, with reliability coefficients ranging from .65 to .86.

Procedure

After receiving permission from the college's Institutional Review Board (no. 330), we handed out printed copies of the questionnaire to the academic staff of the college during staff meetings at the end of the academic school year and via e-mails as well (N = 67) (17 from 24 theoretical, 14 from 24 pedagogical, and 19 from sport). The return rate was 74%.

Ethical Considerations

Participants were fully informed about the purpose of the study, the procedures involved, and their rights as participants. This included assurances of confidentiality and the explicit right to withdraw from the study at any point. Informed consent was obtained from all participants, either in written or verbal form, depending on the context and participants' preference. For interviews, specific consent was also sought and recorded for both participation and the Zoom recording of sessions. To protect participants' data, all collected materials, including survey responses and interview recordings, were stored securely and confidentially. During analysis, all data was anonymised, and identifying information was removed to maintain participant privacy and confidentiality. Acknowledging potential power dynamics, particularly in settings where hierarchical relationships existed, deliberate steps were taken to create a neutral and respectful environment. Participants were reminded that their involvement was entirely voluntary, and they were reassured that non-participation or withdrawal would carry no adverse consequences. The interviewer did not hold a managerial position.

Data Analysis

The data were analysed using SPSS version 29. Chi-square tests were conducted to examine differences between respondents from the four-course clusters regarding all questionnaire sections. We used Chi-square tests because we measured two variables: a nominal variable consisting of four categories (e.g., type of lesson—theoretical, practical, etc.) and an ordinal variable evaluating dimensions such as the extent of change and the level of effectiveness.

Qualitative Research

Participants

For the interviews, purposive sampling was employed to select key stakeholders from each field. Preference was given to experienced faculty members with sufficient seniority to enable comparisons over time, who held a significant percentage of employment or considered the college their primary workplace. A total of 15 lecturers, comprising 10 females, representative of all four course clusters, participated in the interviews. All had tenure at the college and were considered members of the senior academic staff. They were approached individually due to their seniority. They all had an average teaching experience of 26 years (SD = 3.3), and their primary place of employment was at the college. Some or all of them have also answered the anonymous quantitative questionnaire.

Data Generation

Since we aimed to obtain a perspective that addresses processes of change, we selected experienced lecturers and pedagogical instructors rather than new faculty members. Moreover, the seasoned lecturers had experience teaching across all age groups in schools and possessed an in-depth knowledge of the college curriculum. These lecturers were interviewed on three occasions: during the questionnaire development phase, we leveraged their expertise to shape the relevant content domain; after the authors created the questionnaire, they were asked to assess the clarity of the language, the relevance, and the alignment of the items with the research objectives; and lastly, they were requested to contribute additions or refinements to the final version of the questionnaire. Several items were modified in response to the feedback received.

Individual semi-structured interviews were conducted with each participant by the first author of the study. The interview questions were designed to serve as a follow-up to the questionnaire, aiming to achieve a deeper understanding of the lecturers' perceptions regarding the study topic. First, the interviewees were asked the following five questions: (1) To what extent did your teaching methods change during the pandemic compared to the pre-pandemic period? (2) How have changes in your teaching methods affected your methods of assessment? (3) Has your attitude towards grading changed since the pandemic, compared to the pre-pandemic period? (4) To what extent did the assessment methods that you used truly reflect the students' learning processes in your courses, prior to and during the pandemic? (5) Has there been a change in your attitudes toward the importance of assessments, their methods, and the outcomes of your evaluations after the pandemic? If so, is this change related to changes in your course goals, if such changes were introduced?

The interviews were conducted with each participant individually via the Zoom platform at a time and date of their convenience. With the participants' approval provided in advance via email, the interviews were recorded and transcribed. Each interview lasted approximately 20 minutes. While the same questions were presented to all participants at the onset of the interview, free-flowing conversations were held to allow the interviewees to provide in-depth input.

Thematic Analysis

Following Saldana's recommendations for qualitative data analysis (2021), we began by meticulously transcribing the audio recordings from interviews and compiling responses from open-ended questionnaires. We read through the transcripts to gain a comprehensive understanding of the content. We employed iterative coding, a process that involves multiple rounds of analysis and refinement (Nowell et al., 2017). We began by conducting initial or open coding, where we assign descriptive labels to segments of raw data without imposing preconceived categories. As the analysis progressed, these codes were grouped into broader categories based on patterns, relationships, or shared meanings observed in the data. In subsequent coding rounds, we revisited and reorganised these codes, refining and merging them into more coherent and meaningful themes. This cyclical approach ensures that the final themes are both grounded in participants' experiences and relevant to the research objectives.

Results

Guided by the methodological framework outlined above, the data were subjected to both quantitative and qualitative analyses. The findings are presented in two stages:

first, the quantitative findings are reported, followed by the qualitative interpretations, which enrich and contextualise the statistical outcomes.

Quantitative Research

When examining the degree to which the participants had changed their teaching methods since the pandemic, no differences were seen between course clusters in all methods except two: simulation and peer teaching ($\chi^2(3) = 17.308$; $p = -.44$; Cramér's $V = .34$; ($\chi^2(3) = 18.789$; $p = -.27$; Cramér's $V = .35$, respectively).

In mandatory theoretical courses, simulation techniques remained essentially unchanged, with 85% of participants reporting no significant modifications to their approach. Conversely, elective theoretical courses showed more dynamic changes, with simulation methods increasing among 33% of participants. Peer teaching demonstrated a similar nuanced pattern of evolution. Approximately 70% of participants reported no change in their teaching methods when considering overall teaching experience. However, a more positive trend emerged in specific course categories. Mandatory theoretical courses and sport courses demonstrated notable increases in peer teaching methodologies. Figure 1 presents the distribution of responses to this question for all 50 participants.

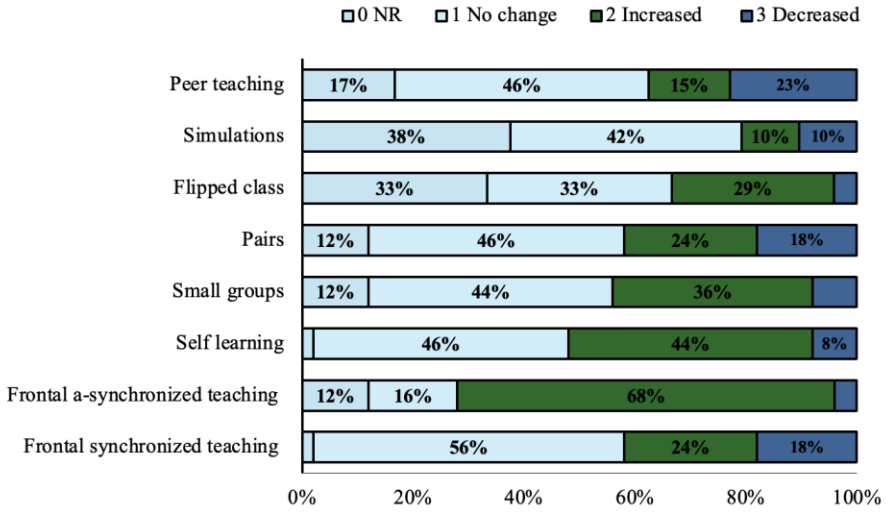

Figure 1. Levels of Change in Teaching Methods between Routine and COVID-19 Times

First, the participants were presented with a list of teaching methods, and for each one, they were asked to rate their degree of change in using that method on a 4-point Likert-like scale (1 = irrelevant, 2 = no change, 3 = increased, and 4 = decreased) following the pandemic. The findings indicate that 20–30% of the participants rated *flipped classes* and *simulations* as irrelevant (i.e., they do not use these methods in their lessons); approximately 10% stated that they found *working in pairs*, *asynchronous face-to-face lessons*, and *peer teaching to be irrelevant*. Moreover, most participants reported that they had not changed their teaching methods since the pandemic began. Finally, *synchronised face-to-face teaching*, *self-learning*, and *working in small groups* were found to be the most prevalent teaching methods, whereas *peer teaching*, *working in pairs*, and *synchronised face-to-face teaching*

decreased among approximately 10% of the participants.

The study also examined changes in evaluation methods across different course clusters since the pandemic. Statistical analysis revealed significant differences in two evaluation methods: multiple-choice question exams and Rapports ($\chi^2(3) = 18.127$; $p = 0.034$; Cramér's $V = .35$ and $\chi^2(3) = 20.528$; $p = .015$; Cramér's $V = .36$, respectively). In the teaching experience cluster, approximately one-third of participants decreased their use of multiple-choice exams, while other clusters maintained consistent usage. Regarding report-based evaluations, sport courses were the only cluster that increased the use of report-based evaluation methods. No significant differences were found in other evaluation methods across the course clusters. Regarding the level of change in *evaluation methods*, *students' self-evaluation* and *ongoing participation in the course digital forum* were deemed irrelevant by almost half of the participants, as shown in Figure 2.

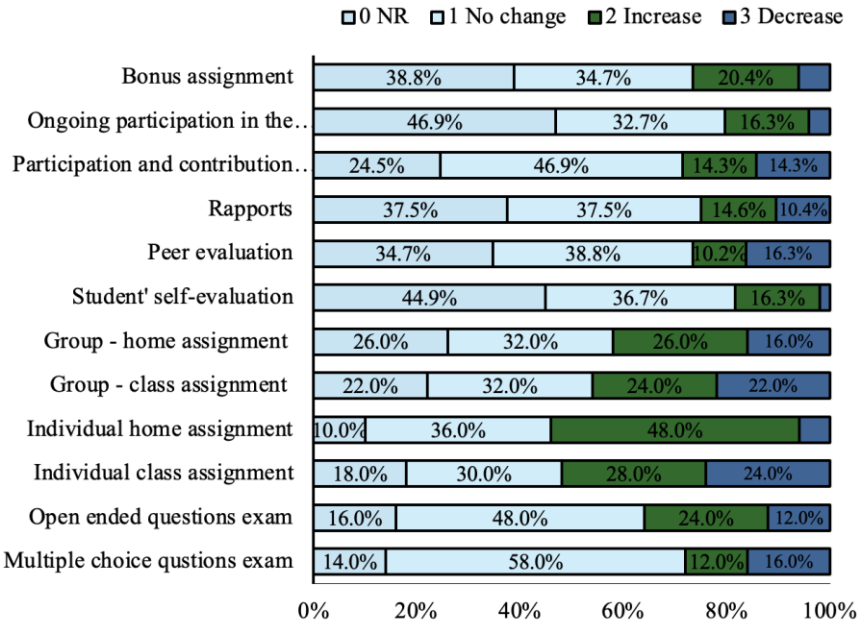

Figure 2. Level of Change in Evaluation Methods between Routine and COVID-19 Times

Similarly, *bonus assignments* and *reports* were considered irrelevant by approximately 40% of the participants, while *exams* and *class participation* remained unchanged for more than half of the participants. Moreover, *peer evaluation* and *reports* remained unchanged for almost 40% of the participants, and no changes were seen in *individual in-class and home assignments*, *group in-class and home assignments*, *reports*, *on-going participation during class*, or *bonus assignments*.

Interestingly, 48% of the participants reported an increase in their use of *individual home assignments*, indicating a greater increase in the use of this evaluation tool compared to all other evaluation methods. Additional evaluation methods that saw an increase in usage from the pre-pandemic to the post-pandemic period were *open-ended exams*, *individual in-class assignments*, *group in-class and home assignments*, and *bonus assignments*—each observed among approximately one-quarter of the

participants. Conversely, approximately one-quarter of the participants reported a decrease in the use of *individual and group in-class assignments*, indicating a decline in their perceived importance as evaluation methods.

Most participants perceived face-to-face learning as the most efficient teaching method for achieving various learning goals, as shown in Figure 3.

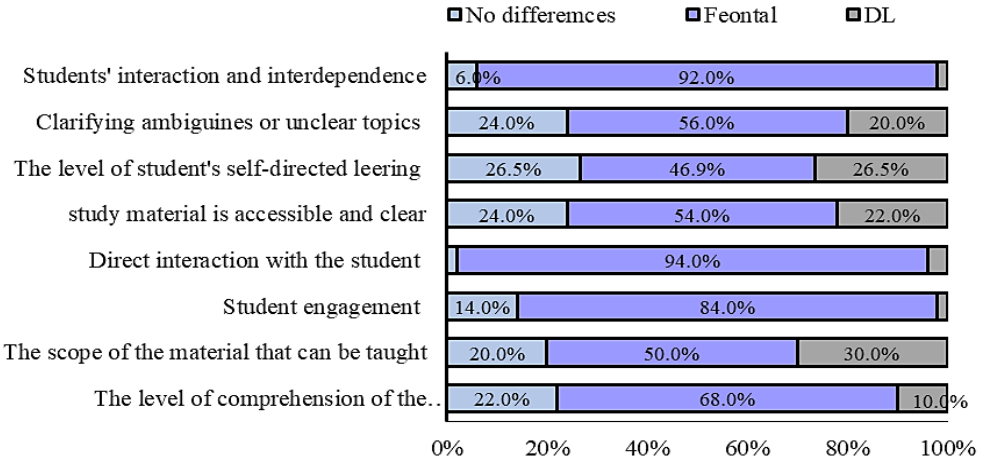

Figure 3. Which Method is More Efficient, Traditional Face-to-Face Instruction or Distance Learning?

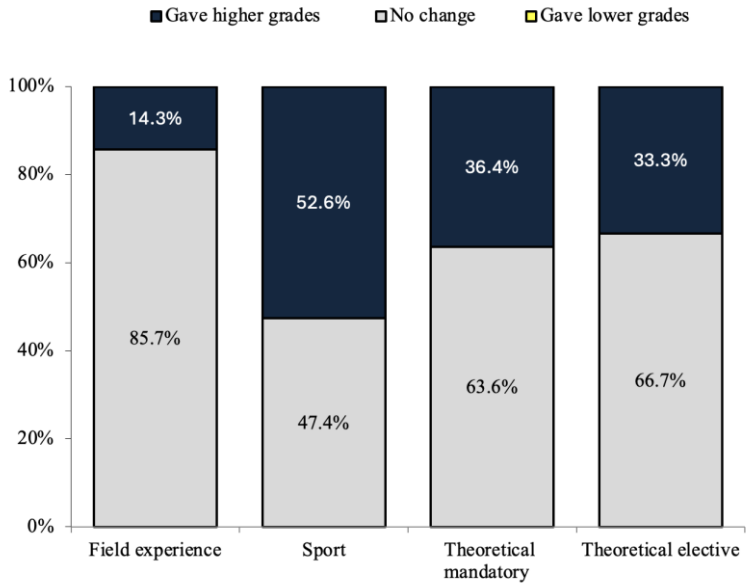

Figure 4. Attitudes Towards Evaluations During the COVID-19 Pandemic Compared to Routine Times

Regarding *attitudes toward grading*, significant differences ($\chi^2(6) = 3.62$; $p = .73$; Cramér's $V = 0.27$) were seen between the four-course clusters, as presented in Figure 4.

Most pedagogical instructors (85%) reported having made no changes to their grading, as did approximately 60% of lecturers from both types of mandatory theoretical courses. Interestingly, among those from the sports course cluster, more than half reported an increase in their grades in the post-pandemic era. No participants reported having lowered their grades during the pandemic compared to pre-pandemic periods. Regarding the question about teaching methods after the COVID-19 pandemic, as seen in Figure 5, most participants stated that they mainly teach in a face-to-face, synchronous manner.

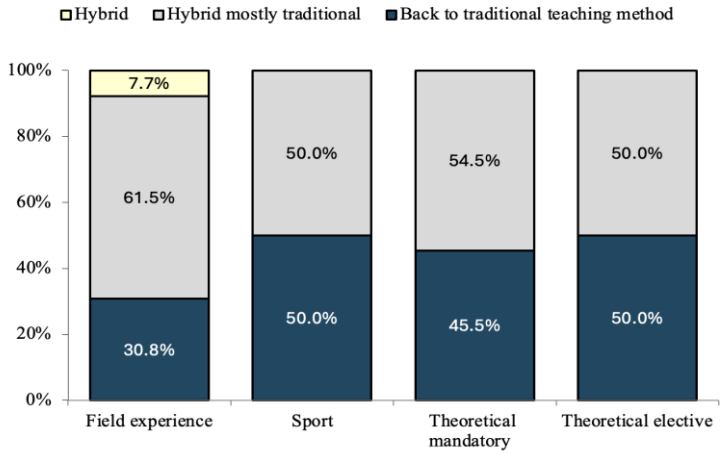

Figure 5. Teaching Methods After the COVID-19 Pandemic

Finally, as shown in Figure 6, while all participants from three of the four-course clusters—elective theoretical courses, sport courses, and field experience—reported a preference for face-to-face teaching over hybrid or distance learning, 72.7% of teachers from the mandatory theoretical course cluster preferred hybrid lessons. Moreover, only participants from the elective theoretical course cluster (16.7%) preferred distance learning classes.

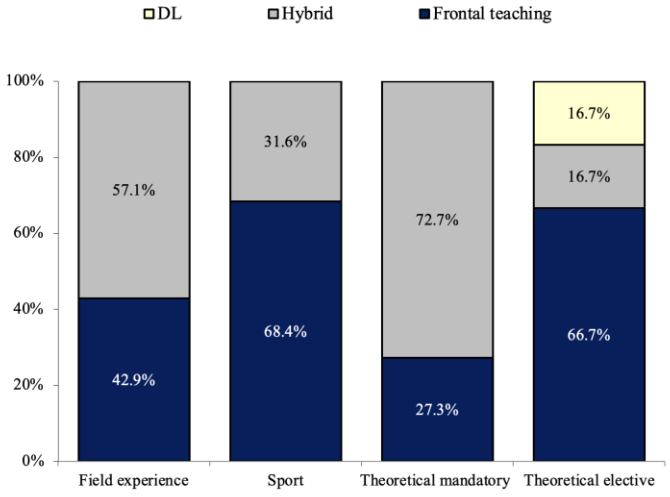

Figure 6. Preferred Teaching Method Among Each Course Cluster (in %)

Qualitative Research

A range of themes and sub-themes were generated from the qualitative interviews, as presented in Tables 1–5, organised in the order of the interview questions and by course cluster. It is noteworthy that this section presents three course clusters: theoretical course cluster, sports course cluster, and field experience course cluster.

The pandemic catalysed a rethinking of instructional strategies. Educators were compelled to abandon traditional, lecture-centred teaching in favour of more flexible, student-centred approaches. The following table presents the diverse teaching methods that emerged or gained traction during this period, revealing a shift towards collaboration, autonomy, and engagement.

As shown in Table 1, the majority of the teachers evaluated their performance during the shift to distance learning as good or very good, indicating a general sense of confidence and adaptability. This self-assessment suggests that, despite the abrupt transition, many educators felt they were able to maintain a reasonable standard of teaching. However, a small yet notable group rated their instruction as poor or very poor, reflecting a possible inequality in digital readiness or access to adequate support. This pattern reveals an overall positive adjustment, though not without individual struggles that could indicate disparities in training or infrastructure.

Table 1. Changes in Teaching Methods During the COVID-19 Pandemic Compared to the Previous Corresponding Period

Themes	Quotes
Theoretical courses	
1. Communication skills 2. More interactive presentations 3. Increased in-class tasks 4. No changes to teaching methods	"Changes were mainly manifested in communication skills. Reading assignments were not changed." "Course products remained the same, we even enriched the content, because of fewer interruptions during the lectures." "I changed all my presentations to allow the students to be more engaged in the learning." "I taught better, I was more focused." "I added tasks during the lectures, to increase the student's involvement. But not always".
Sport courses	
1. Lessons became more theoretical 2. Watching and analysing video recordings 3. Self-video-recordings, analysis, and reflection	"The entire course changed." "There was nothing left of the sport course, it shifted predominantly to theoretical content, with occasional tasks." "As peers, we offered and received support by sharing ideas about how to teach basketball online." "The students had to watch films, analyse movements, independently acquire knowledge about performing certain movements, check each other's performance while providing feedback. Everything except for the real experience. "
Field Experience (pedagogical instructors) 1. Lessons became theoretical 2. Peer teaching 3. Co-operation 4. Increased self-directed learning of student teachers	"At first, we just tried to survive… Schools were closed so we decided to teach more theoretical subjects." "Self-video filming was required and used in peer teaching." "We collaborated with cooperating teachers regarding how and which subjects should be taught." "The student teachers had to be creative in designing lesson units using non-conventional equipment." "We considered different ideas about what could be appropriate for adolescents and decided to serve as fitness coaches. Student teachers demonstrated their ideas and shared them with their pupils."

Table 1 illustrates a clear association between the adoption of collaborative and inquiry-based teaching approaches and shifts in assessment practices. As shown in Table 2, this pedagogical development is accompanied by a transition from conventional testing methods to more open-ended, discussion-focused evaluations. As teaching methods evolved, so too did the approaches to student assessment. With the disruption of conventional testing environments, educators sought more authentic and meaningful ways to evaluate student learning. The table below summarises these changes, highlighting the move away from standardised exams towards open-ended, reflective, and performance-based assessments.

Table 2. Relationships between Changes in Teaching Methods and Assessment Methods

Themes	Quotes
Theoretical courses	
1. No changes	"Since the content didn't change at the onset of the pandemic, I did not change my exams either."
2. More multiple-choice exams	"In the beginning, I gave more multiple-choice tests. But then I started giving more in-class tasks, and mini-projects, and the proportion of the exam from the total grade decreased. "
3. More tasks and projects, less exams	"After returning to campus, I reverted to the former pattern of multiple-choice exams. "
	"Before COVID-19, the only method of grading that I used was the final multiple-choice exam. But later I realised that it wasn't suitable anymore, so I added two assignments, both to be submitted in pairs."
Sports courses	
1. Movement analysis	"Sure, everything has changed."
2. Theoretical aspects, including lessons plans	"I placed a major emphasise on movement analysis, sport history, rule books… student teachers had to film themselves performing individual tasks."
3. Video recordings of individual task demonstrations	"I evaluated lessons that they planned for distance learning. "
Field experience	
1. Video recordings of tasks.	"I evaluated video recordings…"
2. Taught and evaluated teaching skills	"I shifted my focus to certain abilities that are not the focus of evaluation in routine times, like planning, explaining, and demonstrating and movement analysis."
3. Emphasize creating opportunities for social engagement	"Unlike routine times, I experienced the difficulty of my own two children being at home while I taught, so I asked my student teachers to create opportunities for social engagement. That was the major portion of the grade and my main concern. "

Table 2 presents data on the changes in teaching and assessment methods during the transition to distance learning. The most significant trend was a move towards greater flexibility and diversity in both instruction and evaluation. Many teachers reported shifting from traditional frontal teaching to more student-centred approaches, including individual work and asynchronous learning.

In terms of assessment, there was a notable shift away from standardised testing toward more formative, process-based evaluation, such as projects, open assignments, and oral assessments. This shift reflects a broader adaptation to the constraints and opportunities of the online format. However, the table also indicates inconsistency in implementation: not all teachers made these changes, and some maintained more traditional methods, suggesting varying degrees of adaptation. The overall pattern shows an effort to innovate under pressure, though systemic uniformity was lacking. The evolving assessment strategies outlined in Table 2 are reflected in the findings of Table 3, where instructors demonstrate growing discomfort with rigid grading and an increasing

openness to formative, narrative feedback. The transformation in assessment practices led many educators to reconsider their philosophies regarding grading. Questions emerged regarding the fairness, relevance, and psychological impact of traditional grading systems. The next table captures this introspection, offering insights into shifting attitudes toward evaluation and success metrics.

Table 3 presents how teachers perceived the validity and fairness of student grading in the distance learning format. A notable portion of teachers expressed concern about the accuracy of grades, with many indicating that the grades given during distance learning did not accurately reflect students' knowledge or performance. Some teachers believed that grades were inflated, while others felt they were inconsistent due to a lack of oversight or differences in student support at home.

Table 3. Changes in Attitudes Towards Grading During the Pandemic Compared to the Previous Non-Emergency Period

Themes	Quotes
Theoretical courses	
1. More considerate	"I became more considerate than I used to be."
2. Increased the number of assignments	"No change. I was always open-minded, encouraging my students to do their best, and I believe in their efforts."
3. Thoughts about the need for assessments	"I was very sceptical about their taking exams from home, so I increased the number of assignments instead."
	"I found myself asking, do we really need to assess learning?"
Sport courses	
1. More chance for improvement	"I gave the students more chances for improvements."
2. Easier to evaluate theoretical knowledge	"They could practice as much as they wanted, and they just had to send me their final performance. The one that they wanted to be graded for."
	"Since I evaluate the students on theoretical aspects, it was easier for me and them. "
Pedagogical instructors	
1. Greater tolerance and consideration	"I increased the class grade average by about.5 points (out of 10) on the final grade."
	"I extended the submission date of assignments."
2. Less emphasis on rules and regulations	"I encouraged my pupils to work in collaboration with their peers and ignored the freeloaders."
	"I minimised my demands and adjusted them to the fact that the student teachers hardly taught face to face. "

Table 4 compares teachers' views on the effectiveness of assessment methods in reflecting students' learning before and during the pandemic. The data revealed an evident decline in perceived effectiveness during the pandemic. Before the pandemic, most teachers believed that the assessment methods they used adequately reflected students' learning processes. However, during the pandemic, this confidence declined significantly. Despite these concerns, no single dominant viewpoint emerged, reflecting a range of diverse perspectives. Some educators still believed that grading remained fair and appropriate, especially when effort and participation were taken into account. This diversity of opinion highlights a key contradiction: The grading system persisted, yet its validity was increasingly questioned, revealing tensions between the need to assess students and the challenges of doing so fairly in a remote environment. The grading philosophies illustrated in Table 3 align with the findings in Table 4, which highlight instructors' attempts to ensure that assessment methods genuinely reflect course learning outcomes. With these shifts came a renewed focus on alignment—ensuring that teaching methods, assessment tools, and learning objectives were cohesively integrated. The following table examines how educators evaluated and

adapted their assessment strategies to better align with their pedagogical objectives and students' needs.

A higher percentage of teachers reported that the assessments used during distance learning were less reflective of actual learning. This shift underscores a key concern: while instructional formats have undergone rapid changes, assessment practices have struggled to keep pace, resulting in a perceived gap between learning and evaluation.

Table 4. The Extent to Which the Applied Assessment Methods Truly Reflected the Students' Learning Processes on the Course, Prior to and During the Pandemic

Themes	Quotes
Theoretical courses	
1. Exams on knowledge and understanding suit the course goals	"I perceive my course as one where students must acquire basic knowledge. So, I explicitly test their knowledge and understanding."
2. Implications as examples of testing on additional competencies, not merely on knowledge.	"I believe there is an inherent gap between the learning process and the need for grades. But I still follow the college requirements for exams."
	"I do not teach applied aspects, but to differentiate between good and excellent students, I ask about sport-related implications. But I did that before and during the pandemic, no difference."
Sport courses	
1. Exams on chosen aspects of the teaching-learning process	"I can't examine every single subject from the syllabus, so I test my students on two of them. This might frustrate them, and me, but I do not have the luxury of testing the entire class more than twice at most."
2. Exams are fair, relying only on what was taught	"I only test about what I teach. I never ask about tasks that I give them for self-studying. If I do, I ask them to evaluate themselves and then I consider their self-assessment as a bonus. "
Field experience	
1. Full congruency between what was taught and the exam	"I always examine the students on the material that I taught throughout the semester. There are no surprises."
2. Ongoing opportunity to improve by allowing assignment re-submission	"Students have the chances to practice again and again until they feel adequately competent or they excel, depending on their aspiration."
	"Students can improve their grades as long as the timeframe allows, as many times as they want. There is no difference between before the COVID-19 or after. "

The pattern in Table 4 reflects a decline in assessment validity as perceived by teachers, likely due to factors such as lack of direct observation, challenges in verifying student work, and reduced interaction. It highlights a systemic challenge in maintaining meaningful and reliable assessment practices under remote conditions. Table 5's reflections on post-pandemic pedagogical values offer insight into why alignment issues (Table 4) are being revisited; teachers are now more critically evaluating the purpose and function of their assessments, considering pandemic-driven adaptations. The experiences of teaching through a global crisis prompted educators to reflect deeply on their values, priorities, and practices. These reflections extended beyond technical adaptations, touching on the purpose of education itself. The final table presents key themes from these reflections, emphasising a vision for education that is more humane, flexible, and responsive.

Table 5 captures teachers' perspectives on the role and value of assessment in the wake of the COVID-19 pandemic. The data shows that a large majority of teachers emphasised the importance of continuing to measure and evaluate student learning, even in changing instructional environments. However, there was also a strong recognition that assessment methods must evolve.

Teachers expressed a clear preference for diverse and flexible evaluation strategies,

moving beyond traditional tests to include more holistic approaches, such as continuous assessment, portfolio work, and personalised feedback. Additionally, the table reflects that many teachers saw positive by-products emerging from the crisis: it encouraged innovation, deeper reflection on the meaning of evaluation, and a shift toward assessments that support learning rather than measure it.

Table 5. Attitudes Towards the Importance of Measurement, their Methods, and the Byproducts of Evaluation Following the COVID-19 Crisis

Themes	Quotes
Theoretical courses	
1. Refreshing old measurement routines	"I feel that after the COVID-19 crisis, we should refresh our attitudes towards measurements, evaluations, and grading. There is no reason why we should revert to our old routines."
2. Objectivity and equal opportunities for success	"In order to maintain integrity and equal opportunities for learning and improvements, objective measurements should be the focus of our efforts."
3. Course size matters	"Different methods of evaluation should be applied according to course size."
4. Course goals matter	"Different methods of evaluation should be applied according to the course goals. If we change our goals, we need to change our evaluation methods. "
Sport courses	
1. Self-directed learning	"In the future, I would refer more to self-directed learning and practice as an integral part of the requirements. We have seen that they the students can learn and practice alone."
2. More film analysis	"Film analysis increased students understanding of movement. It should be part of their overall competencies to be assessed"
Pedagogical instructors	
1. Technological skills	"We assimilated technology to our field experience, so technological skills should be part of their competencies that are assessed."
2. Social-emotional skills	"We must assimilate social-emotional aspects into our curriculum and decide what and how to measure it."
3. Collaborating with peers	"Collaborating with peers has been proved to be an efficient way to overcome a variety of obstacles. We should teach them how to do so effectively and assess this ability."

The overarching pattern in this table is a reaffirmation of the importance of assessment, accompanied by a desire to reform how it is conducted. Teachers were not dismissing evaluation; instead, they were advocating for more meaningful, supportive, and adaptive methods, recognising that old models no longer fully served the needs of post-pandemic education.

The findings presented across Tables 1 to 5 illustrate a dynamic and interrelated shift in educational practices during and after the COVID-19 pandemic. Table 1 highlights the emergence of more flexible and student-centred teaching methods, such as project-based and collaborative learning. This pedagogical transition is reflected in Table 2, where traditional assessments, such as multiple-choice exams, have given way to more authentic forms of evaluation, including portfolios, reflections, and performance tasks. These evolving practices align with changes in instructors' attitudes toward grading (Table 3), as educators increasingly questioned rigid grading schemes and moved toward more formative, descriptive, and individualised approaches.

This shift in grading attitudes corresponds with insights from Table 4, which emphasises the growing awareness among educators of the need to align assessment practices with intended learning outcomes. As educators re-evaluated what constitutes meaningful learning, they began to critically assess whether their evaluation methods truly supported their pedagogical goals.

Finally, Table 5 brings a reflective lens to these developments, revealing how experiences from the pandemic prompted

deeper philosophical shifts. Educators expressed a newfound appreciation for learner autonomy, well-being, and intrinsic motivation, factors that, in turn, validated the earlier pedagogical and assessment transformations. In this way, the tables do not stand in isolation but instead form a cohesive narrative: the pedagogical changes documented in Table 1 led to new forms of assessment (Table 2), which influenced grading philosophies (Table 3), brought attention to assessment alignment (Table 4), and ultimately catalysed broader reflections on the goals of education in the post-pandemic era (Table 5).

Discussion

This study examined how PE teacher educators adjusted their teaching and evaluation methods in response to the pandemic, the relationships between the attitudes and actions of these educators regarding student evaluations and grades, and the 'lessons learned' from their teaching experiences during the pandemic. First, the findings reveal that, despite the transition to distance learning and other imposed limitations, most participants did not modify their teaching methods; instead, they continued to employ synchronous face-to-face teaching, self-directed learning, and group work. It is worth noting that the rapid adaptation to the use of basic technology following the sudden transition to online teaching was impressive, as documented by others (e.g., Carrillo & Flores, 2020). However, others argue that since online teaching persisted as the only viable option during the pandemic, emergency distance teaching had to evolve into well-planned online teaching that leveraged the advantages of such learning (Barbour et al., 2020; Sutiah et al., 2020).

Nonetheless, educators from the theoretical course cluster who taught larger classes reported that online teaching allowed them to communicate more effectively, implement their lesson plans more efficiently, and cover the curriculum within the allocated time. They retained their traditional presentation styles by predominantly employing synchronous online teaching, exclusively via the Zoom platform. In contrast, educators from the sport course cluster faced greater challenges during the initial stages of the pandemic. Physical activity and movement courses involve intensive social interactions and physical contact, requiring motor learning, adequate space, suitable equipment, and suitable facilities (Foye & Grenier, 2022; O'Brien et al., 2020). Consequently, online teaching presented significant challenges: much of the practical content was lost in the transition, and for the content that could be taught remotely, educators expressed concerns regarding the lack of authenticity in learning and difficulties in captivating and engaging learners. This situation necessitated creative thinking and collaborative efforts to design meaningful lessons.

Moreover, while educators from the theoretical course cluster became more practical in their teaching methods and attitudes toward learning, those from the sport course cluster adopted a more theoretical approach. In other words, and in line with the literature, each cluster of teachers sought changes to their teaching routines that would increase their relevance and enhance student engagement (Lowenthal et al., 2020). However, the interviewees conveyed that their increased emphasis on student engagement, achieved mainly through tasks and assignments, led to a perceived issue of student overload, resulting in students complaining to the college. Consequently, top-down instruction was implemented as a means of alleviating academic demands and demonstrating greater consideration for the students and the unprecedented circumstances caused by the

pandemic. When examining the field experience course cluster, two sub-groups of pedagogical instructors emerged. First, those who worked with first-year student-teachers insisted on maintaining a 'business as usual' front, as if changes were a matter of choice. This may have served as a strategy for managing uncertainty, i.e., do not do anything of which you are not sure of the outcomes in advance (Riabacke, 2006); or as described by Anderson (2003), individuals tend to avoid making decisions by putting them off, not acting, or maintaining the current state for reasons such as analysing costs versus benefits, expecting regret, or facing challenges in making a choice or anticipating negative emotions. The second subgroup of pedagogical instructors, as reported in the findings, provided students with a substantial degree of autonomy, continuously implemented adaptations in response to changes imposed by the pandemic, and encouraged them to work in teams and apply creative thinking to resolve unexpected issues. According to the strengths-weaknesses-opportunities-and-threats (SWOT) model, introducing changes to teaching methods in PE teacher education institutions during COVID-19 served as a strength (O'Brien et al., 2020). These differences in approaches could stem from the degree of the students' practical experience (first or second year), their resources for coping with difficulties, and the decision-making dynamics and patterns within each subgroup.

The second aim of this study was to examine the relationships between attitudes and actions regarding student evaluations. Interestingly, no participants gave lower than usual grades during the pandemic. Educators from the sport course cluster increased their grades more than those from the theoretical course cluster, while pedagogical instructors hardly altered their grades at all. Kirk (2009) argues that PE student teachers experience difficulties in excelling due to the variety of competencies and skills required of them, including theoretical courses, sport courses, and teacher training in schools. Hence, these results could be related to the exams and assignments given in the sport courses, which became more theoretical, particularly as teachers chose to be more considerate under the circumstances.

The findings of the quantitative section of this study indicate that exams and class participation remained essentially unchanged. At the same time, an increase was observed in individual and group class assignments, as well as home assignments. The qualitative findings further clarified this issue, as the participants expressed concern about student engagement due to the distance learning, which allowed students to turn off their cameras and 'disappear' into passivity. From the teachers' perspective, individual and group assignments created more opportunities for providing students with feedback, thereby monitoring their progress and the quality of interactions, which is a 'great engine for learning' (Rapanta et al., 2020). Since teachers often seek student engagement during their lessons, students' workloads and expectations for self-learning have increased. However, as described above, this led to students' complaints, which resulted in a top-down demand from college management, requiring lecturers to be more considerate of the students during the crisis and to assign fewer assignments. Hence, it can be assumed that the reason for the small changes in evaluation methods stems from this decision, which was dictated from above, with teachers continuing to use multiple-choice or open-ended exams rather than individual or group assignments.

The third and final aim of the study was to examine what teacher educators adopted or recommended adopting in the future, in light of the lessons they learned from teaching during the COVID-19 pandemic. As the

pandemic persisted, distance learning and other adjustments remained in place for an extended period. As such, it could be expected that changes introduced by PE teacher educators would continue to be assimilated. However, our results indicate that the majority of the participants, both in the quantitative and qualitative research, perceived face-to-face teaching as the most efficient teaching method, and as such, reverted to this traditional manner of teaching after the pandemic. However, some participants did provide examples of teaching methods that they had created or applied during the pandemic and proposed that these methods should be adopted. For example, breaking large assignments into smaller ones that could be addressed from lesson to lesson, or allowing students to adapt for the general assignments' instructions, provided they offer a rationale and stay within the course goals. In line with Dague et al. (2021), the participants in this study spoke of the increased importance of self-learning compared to the past. Finally, the participants acknowledged the importance of student autonomy, self-pacing, and reflection, and encouraged peer collaboration.

To enhance the coherence and interpretive value of the study, we synthesised the findings under broader conceptual themes rather than being confined to teaching clusters. This approach allows for the identification of cross-cutting patterns that illuminate institutional and pedagogical dynamics. Seven key themes are particularly salient. (1) *Pedagogical adaptability* refers to how educators creatively and flexibly adapt their approaches in crisis conditions, often requiring them to redesign or adjust their course delivery in real time. It encompasses the various ways educators shifted from traditional, teacher-centred models to more flexible, student-centred approaches. This was especially visible in the use of collaborative tasks, self-directed learning, and peer engagement during remote instruction. (2) *Digital equity* addresses disparities in students' access to devices, internet connectivity, and digital literacy, highlighting persistent challenges in inclusive education. (3) *Technological adaptation* reflects the varying degrees of success in adopting tools such as learning management systems, video conferencing, and asynchronous platforms. (4) *Emotional labour and wellbeing* address the psychological toll on both staff and students, as emotional support has become a central, often invisible, aspect of teaching. (5) *Assessment reform* encompasses changes in grading practices, exam formats, and perceptions of academic integrity in online contexts. (6) *Institutional inertia versus innovation* captures tensions between the urgency for systemic transformation and the pull of traditional norms. Finally, (7) *student engagement and autonomy* examine how shifts in modality affected learners' motivation, participation, and ownership of their learning process. Grouping findings thematically in this way allows for richer analysis, broader applicability, and a more theoretically grounded discussion of the educational response to the pandemic (Braun & Clarke, 2006).

Concerning face-to-face teaching after the pandemic, despite the widespread adoption of novel digital tools and instructional strategies during emergency remote teaching, most educators in this study returned to traditional in-person modalities as soon as conditions permitted. This reversion suggests not only a preference for conventional practices but also reflects underlying issues such as limited institutional support for sustained innovation, low digital self-efficacy among faculty, and a cultural valorisation of physical presence as central to "authentic" teaching (Bozkurt et al., 2022). Moreover, temporary digital tools were often treated as crisis responses rather than

strategic enhancements, resulting in their rapid abandonment. These trends mirror broader international patterns in higher education and underscore the need for leadership that fosters the long-term integration of effective remote and hybrid strategies.

The grading patterns identified in this study also warrant more critical scrutiny. The apparent increases in student grades in some clusters, particularly in sport courses, could reflect either intentional pedagogical choices or unconscious bias. Instructors may have adopted more lenient approaches to account for students' difficult circumstances, as observed in other post-COVID studies (Chen et al., 2022). However, without clear institutional guidelines or calibration across course clusters, these grading shifts risk inconsistency and may obscure the validity of student achievement metrics. It is essential to interrogate whether such changes were guided by a pedagogical rationale or emerged as emotional responses to the crisis. Clarifying the intentions behind grading trends would provide insight into institutional grading cultures and support the development of more transparent assessment frameworks.

The SWOT framework serves not merely as a descriptive tool but as an analytical structure for understanding institutional readiness and response in post-pandemic education. Strengths became evident in the rapid technological adaptation of many educational systems, where digital competencies among both educators and learners improved, as mentioned elsewhere (UNESCO, 2021). This unexpected acceleration facilitated the normalisation of blended learning approaches and the integration of educational technologies into everyday instruction. Weaknesses, however, included pronounced disparities in digital access and the pedagogical challenges faced by educators who lacked prior experience with online platforms. These vulnerabilities revealed systemic gaps, particularly in areas where infrastructure and training were inadequate.

At the same time, the crisis unveiled numerous opportunities. The global disruption acted as a catalyst for policy reform, curriculum innovation, and cross-sector collaboration. Initiatives that had previously been slow to gain traction, such as competency-based education and the incorporation of socio-emotional learning, gained momentum and institutional legitimacy (Reimers & Schleicher, 2020). Furthermore, the crisis emphasised the need to redesign educational spaces to support personalised and flexible learning, thus promoting more inclusive and resilient systems. Threats, however, loom in the form of long-term learning loss, growing inequality, and the potential for superficial adoption of technological solutions without sufficient pedagogical depth (Zhao, 2022). These risks highlight the importance of sustainable planning that prioritises equity and quality.

To navigate these elements strategically, educational leaders must rely on decision-making theories that account for complexity and adaptability. The bounded rationality model, as described by Simon (1997) and applied in recent educational management studies, emphasises the need for decision-makers to operate within the constraints of limited information and time. In a pandemic-affected context, this model aligns with the iterative, 'good enough' decisions schools often had to make. More contemporary models, such as adaptive leadership and distributed decision-making, have also gained relevance. These frameworks advocate for collective sense-making, responsiveness to evolving needs, and shared responsibility among stakeholders (Bryk et al., 2021; Fullan, 2021). By incorporating these theoretical insights into strategic

planning, institutions can transform reactive measures into proactive reforms.

Some limitations should be addressed. First, the sample size for the quantitative survey was relatively small, involving only 50 participants, which limits the generalisability of the findings. However, the proportional stratified sampling approach ensured diverse representation across different lesson types, providing a broad perspective within the specific context of the study. Second, self-reported data from both the quantitative and qualitative components may be subject to social desirability bias, where participants respond in a manner they believe is more socially acceptable. Despite this, employing both quantitative and qualitative methods helps cross-validate the findings, thereby reducing the potential impact of this bias. Third, in the qualitative aspect of the study, purposive sampling was employed to focus on experienced faculty members, which may have excluded the perspectives of newer staff. However, this approach allowed for rich, in-depth insights from senior faculty, whose experiences are particularly relevant to understanding the changes in teaching over time. Fourth, the study was also limited to a single institution, which restricts its external validity. Nonetheless, the thorough analysis of a single teacher education college provides detailed insights that can inform similar educational settings.

Finally, although a detailed analysis of teaching methods and assessment changes is provided, this is not explicitly linked to measures of student engagement, academic performance, or skill acquisition. Due to the focus of the current study, we have not included student learning outcomes in this analysis. However, we measured them, and the results are published elsewhere, along with indicators such as grade distributions and course completion rates (Fox et al., 2023).

Conclusions and Practical Implementations

Despite the global disruption caused by the COVID-19 pandemic and the resulting shift to distance learning, the current study found that few long-term changes were made to teaching and evaluation methods in PE teacher education. Instructors of both theoretical and practical courses largely reverted to traditional, face-to-face teaching after the crisis. However, on a more optimistic note, while individuals are often resistant to change and its potential benefits (Kegan & Lahey, 2009), the pandemic laid important groundwork: the soil has been prepared, and the seeds of transformation have been sown.

This study identified creativity and teamwork as the primary resources leveraged to navigate the challenges of the pandemic. Participants emphasised the creative expansion of pedagogical approaches that enhance student engagement. One such approach could be the “Own it, Learn it, Share it” (OLSit) model (Lee & Hannafin, 2016), which encourages self-directed learning and active participation. Cultivating creativity among PE teacher educators should therefore be viewed not only as a strategy for coping with crises but as an essential professional competency for fostering long-term adaptability and innovation.

Teamwork also played a crucial role during the pandemic, enabling educators to share ideas, co-develop new teaching methods, and support each other in facing unforeseen challenges. Strengthening collaborative practices within teacher education programmes can serve as a sustainable mechanism for continuous improvement and knowledge exchange.

Given these findings, policy and decision-makers in teacher education institutions, particularly in PE, should provide educators with increased autonomy, practical tools, and professional development

opportunities. Simulations of diverse teaching and assessment methods could enhance readiness for innovation and foster openness to change. Although many educators have returned to traditional practices, ongoing reflection on lessons learned during the pandemic is crucial for implementing meaningful and lasting improvements. Ultimately, the study encourages a re-evaluation of grading practices in teacher education, advocating for a more thoughtful alignment between assessment strategies and evolving educational values. While many of the adaptations described in this study were implemented at the individual educator level, the findings have broader implications for institutional policy, curriculum development, and faculty professional learning.

Institutional policy: To foster long-term educational resilience, teacher education institutions should consider formally integrating hybrid teaching models into their instructional frameworks. Such models, which combine face-to-face and online modalities, offer flexibility and continuity in times of disruption. Institutional support structures—including technological infrastructure, instructional design units, and leadership commitment—are essential to ensure sustainable implementation and scalability.

Curriculum reform in PE teacher education: The pandemic underscored the importance of embedding digital literacy, pedagogical adaptability, and assessment innovation into the formal curriculum of PE teacher education programmes. Institutions should revise their curricula to include structured training in digital pedagogies, the use of multimedia and asynchronous tools, and the design of authentic assessments tailored to both in-person and remote contexts. This will better prepare future PE teachers to respond to evolving educational environments and learner needs.

Faculty development in digital pedagogy: The professional development of academic staff must extend beyond emergency upskilling and towards continuous, reflective learning. Institutions should invest in long-term faculty development programmes that focus on integrating digital tools with pedagogical intent. This includes training in hybrid course design, student engagement strategies in online and blended settings, and evidence-based approaches to digital assessment. Building such capacities among faculty members will not only enhance instructional quality but also cultivate a culture of pedagogical innovation within teacher education institutions.

In sum, while the immediate pedagogical shifts prompted by the COVID-19 pandemic were often reactive, the lessons learned present a strategic opportunity for systemic transformation. Aligning policy, curriculum, and faculty development efforts is crucial to embedding the adaptive capacities demonstrated during the crisis into the fabric of PE teacher education. To ensure resilience in the face of future disruptions, PE teacher education must move beyond emergency adaptation toward structural innovation grounded in equity, flexibility, and pedagogical depth.

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Ethical approval for this research was granted by the Institutional Review Board (IRB)at the Levinsky-Wingate Academic College (330).

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Supplementary Material 1: Lecturers' Questionnaire

To: _____

Hello,
We are conducting a study to learn about measurement and evaluation methods at the college before and during the COVID-19 period.

If you agree to participate in the study, please circle the appropriate statement and answer the questionnaire.

☐ I agree to participate in the study / ☐ I do not agree to participate in the study

Mark - I am a lecturer in: ☐ Theoretical courses ☐ Practical courses ☐ Teaching practicum ☐ Seminar

The study examines four periods:

1. Semester A, 2019-2020 (Pre-COVID) — Normal teaching
2. Semester B, 2019-2020 (Start of COVID) — Exams conducted via Zoom
3. Semester A, 2020-2021 (Second COVID semester) — Exams conducted via Tomax system
4. Semester B, 2020-2021 (Third COVID semester) — On-campus frontal exams

Thank you in advance.

The Research Team

If you teach more than one type of course, please complete a separate questionnaire for each course cluster.

Supplementary Material 2: Evaluation Before and During COVID-19

Please rate the extent to which the following statements describe your work regarding the grading components in the syllabus (1 = Not at all; 5 = Very much):

Statement	1 (Not at all)	2	3	4	5 (Very much)
Before COVID (Period A): Adhered to syllabus grading components					
Start of COVID (Period B): Changes to syllabus grading components					
COVID Semester A (Period C): Changes to syllabus grading components					
COVID Semester B (Period D): Changes to syllabus grading components					

Specify the grading components and any changes for each period:

Supplementary Material 3: Teaching Methods Frequency

Mark X under the number indicating how often you used each teaching method (1 = Not at all; 5 = Regularly):

Teaching Method	Period A (Pre-COVID)	Period B (Start of COVID)	Period C (COVID Semester A)	Period D (COVID Semester B)
1. Full synchronous frontal teaching				
2. Asynchronous frontal teaching				
3. Students' self-learning with lecturer guidance				
4. Work in small groups				
5. Work in pairs				
6. Flipped classroom				
7. Simulations				
8. Peer teaching				
9. Other (specify): _____				

Supplementary Material 4: Grading Components Usage

Mark X under the number indicating how often each grading component was used (1 = Not at all; 5 = Very much):

Grading Component	Period A	Period B	Period C	Period D
1. Multiple choice exam				
2. Open-ended questions exam				
3. Individual in-class assignment				
4. Individual homework assignment				
5. Group in-class assignment				
6. Group homework assignment				
7. Student's self-assessment				
8. Peer assessment				
9. Reports				
10. Participation in class				
11. Weekly forum participation				
12. Bonus assignment				
13. Other (specify): _____				

Circle the number that best represents your grading approach during COVID compared to normal times:
1 - Graded more strictly
2 - Maintained similar average and distribution
3 - Graded more leniently