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E-Based Practicum: A COVID-19 Model Worthy of Retention for Student-Teachers in Guyana

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Abstract

Practicum is critical to the teacher education programme at the University of Guyana. Practicum offers opportunities and experiences for skills development and simulations to enable student-teachers to acquire and demonstrate effective pedagogical practices and innovations. In 2020, the COVID-19 pandemic reconfigured practicum to e-based modes, capitalising on mock teaching and video-stimulated reviews. A descriptive survey allowed 241 student-teachers to visualise and categorise their experiences, challenges and potential opportunities from this new learning mode. The elements of e-based practicum that make it worthy of retention include its capacity for autonomous off-campus learning and experimentation, partnership and equitable relations, performance pacing and gauging, archiving of pedagogical growth, technology literacy skills development, and reflective and self-correcting practice. The experiences of these student-teachers could help (re)shape the practicum delivery for future cohorts and be informative for reviewing and upgrading practicum courses that rely solely on physical classroom interactions, observations, and supervision.

Keywords: online practicum, post-COVID-19 teacher education, reflective practice, video-stimulated reviews

1. Introduction

There has been nothing recently like the COVID-19 pandemic that could have prepared the education system globally. The mandatory closure of educational institutions disrupted the continuity of face-to-face teaching and learning and, where infrastructure permitted, steered the world online. Lessons learnt from the online movement were emphasised on International Day for Digital Learning (19 March 2024) by Audrey Azoulay, Director-General of UNESCO. These include: (1) Advancements in connectivity, portability, open educational resources, and artificial intelligence have created more possibilities to reach marginalised learners. (2) Escalation in internet connectivity for the global population from approximately 16% in 2005 to 67% in 2023. (3) Technology can complement and enhance educators' work if actively steered on our terms.

In general, digital technologies offer opportunities that go beyond a stop-gap solution during the COVID-19 crisis and allow for finding new or additional answers to what people learn, how people learn, where people learn and when they learn (Aljawarneh, 2020; OECD, 2020). With adaptable pedagogical strategies, technologies have become essential tools for transforming education systems and fostering higher quality and inclusion (European Commission, 2020; Oyedotun, 2020; Winter et al., 2021). Using the positive impacts of technology in education acts as a springboard for efficacy in institutional practices, teachers' practices, assessment of learning, experimentation and research (Garcia et al., 2024; Griffith, 2023; Jarke & Breiter, 2019; Mingot & Marín, 2024; Sinha, 2021).

While online teacher education predates the COVID-19 pandemic, reflectively, practice teaching is one of the significant components of teacher education that was not commonly offered virtually (Downer et al., 2009; Karkar-Esperat & Bahlmann-Bollinger, 2023; Pianta et al., 2008). Virtual approaches were less common because practicum is deemed to require the face-to-face human interactive element (Msangya et al., 2016; Rakesh, 2013). When this human aspect of teacher training was threatened during the COVID-19 pandemic, the digital revolution in education offered a space for student-teachers to experience practice-teaching opportunities not possible in physical teaching and learning environments (Atmaca, 2023; Karkar-Esperat & Bahlmann-Bollinger, 2023; UNESCO, 2024). Concerning university training, Mueller and Skamp (2003) remind us that while

practicum offers student-teachers the platform to link theory and classroom practice, many struggle to establish that link or find a balance. The online movement amplified these struggles (Karkar-Esperat & Bahlmann-Bollinger, 2023). Nonetheless, the University of Guyana (UG) transitioned online to uphold other practicum objectives, such as promoting conflict literacy, self-awareness, empathy, leadership, and collaborative skills (Malm, 2009). Student-teachers also know the value of teaching practice, and they perceive it as an essential aspect of their preparation for the teaching profession since it provides an interface between studenthood and membership in the profession (Msangya et al., 2016; Rakesh, 2013).

The efforts of the UG are noteworthy and are documented in reports and policies for course management and assessment in emergency modes (see Lashley et al., 2020; Oyedotun, 2020; University of Guyana, 2020). Oyedotun (2020), the first to publish UG's reaction to the conduct of teacher education, successfully captured the efforts: "The University of Guyana, as an example of a university in a developing country, fared relatively well in handling the disruption caused by the COVID-19" (p. 3). In the same vein, Oyedotun (2020) pointed to shortcomings and failures and offered recommendations for improvements. In keeping with Oyedotun's (2020) concerns, we remained cognisant that there must be continuous analysis of mitigating situations of this online movement. For example, learners from disadvantaged backgrounds with fewer family resources and less access to online learning resources benefit less (Eyles et al., 2020). Other concerns relate to burnout during online learning (Huang et al., 2024; Peterka-Bonetta et al., 2019); lack of electronic gadgets and experience in using technological tools (Oyedotun, 2020); connection, network and electricity problems (Adekannbi & Ipadeola, 2024; Atmaca, 2023; Oyedotun, 2020; UNESCO, 2024); learning preference (Boffelli et al., 2021); lack of, and change in interaction patterns between learners, distraction, lack of learning climate and poor adaptation to remote assessment (Zhang & Wu, 2022). Individually or collectively, these problems ultimately result in significant learning loss (Bergdahl, 2022; Contreras-Castillo et al., 2004; Xu et al., 2020). While COVID-19 is no longer a pandemic, we remain mindful of the "importance of investigating carefully which practices build on students' assets as opposed to furthering inequities" (Richmond et al., 2020, p. 503). Inattention to struggles and concerns could compromise post-pandemic online instruction as a possible effective alternative to teaching and learning at UG.

This research offers the experience of participating in online practicum courses at UG's Faculty of Education and Humanities. Such understanding is needed to understand how to deliver in the event of a similar crisis. Exploring the inner workings of the UG online practicum courses also offers insights into elements that could be retained to improve and expand practices in a digital age. Research is beginning to illustrate the feasibility of creative practicum practices promoting virtual field experiences during COVID-19 (see Karkar-Esperat & Bahlmann-Bollinger, 2023). Our research hopes to add to these illustrations by showing how the UG has gotten on board with e-learning teaching to cater for its students during the pandemic and beyond.

2. Study Context

Normalcy and its pseudo changed in Guyana on 11th March 2020 when the country recorded its first confirmed case of COVID-19. At the UG, the instituted restrictions and stay-at-home orders abruptly transitioned curriculum delivery and evaluation to online modes. This move was necessary to mitigate financial issues related to learning loss observed in studies such as Baker (2013) and the adverse effects limitations in the knowledge and skills of teachers could have on the learning experiences of children (Chetty et al., 2011; Dunlosky et al., 2013; Korpershoek et al., 2016).

Transition for the taught/lecture-based courses was less tricky than practicum. Practicum relied principally on campus-based tutorials/teaching clinics and on-site observations and employed notetaking and reflecting to guide post-conference discussions. Staff and students already interfacing with the UG Moodle platforms transitioned much easier to e-based practicum than those forced to adapt abruptly. While pre-pandemic, most of the UG courses were traditionally delivered, it was recognised that technology could advance the teaching and learning experience. Pre-pandemic, the university explored ways to bridge the divide between traditional and digital texts, and some courses were delivered online. The pandemic accelerated the implementation of e-based practicum resources. It helped the Division of Education craft and convert the delivery of practicum courses into mock and e-based teaching from the latter part of the 2019/2020 Academic Year (April to August 2020).

2.1 Mock Teaching

Cross-disciplinary, mock teaching is an established component of training that permits practice-based learning in controlled environments (Peavey et al., 2012). At UG, mock teaching for student-teachers is an intricate performance of pedagogical competencies that requires applying the methodological principles of adaptable, flexible, efficient and effective pedagogical practices. Mock teaching requires student-teachers to demonstrate

pedagogical technicalities by incorporating most of what goes on in actual classrooms and other learning spaces. It requires similar levels of engagement with supervisors that could lead to good learning opportunities for student-teachers and developmental outcomes for children. To effectively carry out mock teaching exercises, student-teachers must be intellectually prepared - thinking about potential challenges/barriers and strengths/opportunities that might be identified by their supervisors/instructors and peers (Li, 2015). In short, mock teaching is usually challenging yet rewarding (Li, 2015). Student-teachers work as hard as, or even harder than, when conducting an actual face-to-face classroom lesson. For these reasons, mock teaching remains an authentic technique in teacher education at UG.

Mock teaching is fundamental to student-teachers with little or no experience, as "it serves a bridge between classroom realism and professional realism" (Li, 2015, p. 328). Before the COVID-19 pandemic, the early childhood unit at the UG conducted mock teaching through face-to-face engagements and interactions on campus. It was conducted with peers or imaginary children during Teaching Clinics as preparatory support for actual field teaching. The approach of e-based mock teaching was introduced and implemented in April 2020 by the authors in response to the COVID-19 pandemic. The following performance checklist lists the competencies assessed by e-based mock teaching:

1. Evidence of preparation of a plan of work/activities
2. Creativity and resourcefulness (use of a variety of materials, equipment and other teaching and learning aids)
3. Knowledge of the subject matter
4. Appropriateness of content to the level of children
5. Sequencing and linking of concepts - simple to complex, past and future
6. Smoothness of transition from one activity/focus point to another
7. Evidence of children's involvement
8. Quality and use of language appropriate for the level of children
9. Arousal/sustenance of interest (using children's names etc.)
10. Respect for children's effort and ability - encouragement/praises
11. Pleasant and appropriate tone of voice
12. Effectiveness of questioning: variation in questioning - lower and higher cognitive level questioning (e.g., facts, comprehension, application, analysis, synthesis, evaluating)
13. Ending the lesson (deliberate attempts to tie together the planned and chanced events of the lesson and relate to objectives/ aims)

The e-based mock teaching was a workable and acceptable alternative. However, the need for demonstration and assessment of competencies associated with actual classrooms or with children was also necessary for the completeness of the practicum courses. Because the schools were closed, student-teachers experimented with teaching children in their own homes or neighbourhoods. These sessions were recorded and shared with their practicum supervisors. This initiative gave rise to the concept of "e-based practicum". E-based practicum encompasses video recordings of mock teaching (with imaginary children) and actual engagements with student-teachers and children.

2.2 E-Based Practicum

As stated in the previous section, the approach to e-based practicum borrows many elements of face-to-face practicum structures. During the semester, practicum supervisors meet with students on Zoom as a collective for synchronous sessions at established times for discussions, presentations, and debates. Opportunities are also available to ask questions and clarify concepts of asynchronous self-studied materials posted on the UG's Moodle platform. These materials include teaching videos of the student-teachers and samples of others, lesson plans, course outlines, readings and assignments. Student-teachers must also attend individualised sessions to discuss elements specific to their learning and development. A study by Karkar-Esperat and Bahlmann-Bollinger (2023) documented similar features as necessary components for online practicum in the USA.

The video recording component of the UG's e-based practicum is built on the principles of web-mediated individualised coaching from the My Teaching Partner (MTP) programme. The MTP is an alternative approach to delivering practicum courses in the USA, where face-to-face methods are unavailable (Downer et al., 2009;

Pianta et al., 2008). The MTP training process involves extensive opportunities for teachers to engage with diverse teaching resources, including lesson plans, materials and video clips that exemplify high-quality interactions. Web-mediated individualised coaching takes place every two weeks, and teachers send video recordings of their classroom teaching to tutors/coaches/supervisors who select clips for review and pose reflective questions that teachers address and record. The student-teachers at UG share at least two recordings with their supervisors. During the video-stimulated reviews, the student-teachers identify what aspects of their teaching did and did not work and why (Trivette et al., 2012). Supervisors then share information about what the student-teachers did well during the lesson and how they might improve.

An essential element of video-stimulated reviews is reflecting on student-teachers' overall learning experiences and self-assessment of mastery of knowledge and skills to improve their professional practice and identity development and raise critical consciousness (Bailie et al., 2021). The student-teachers and supervisors use the established performance checklist above to observe and reflect upon specific aspects of practice. The rationale for using the checklist is that it encourages reflection and promotes a deeper understanding of practice. Documenting supervisor-teacher discussions is also necessary as it facilitates self-assessment of teachers' knowledge of practice. The final phase involves planning to determine future goals. Positive outcomes of video-stimulated reviews have been well-documented. This approach to training and professional development of teachers has been recognised for its effectiveness across on-site, virtual, and distance spaces (see Downer et al., 2009; Eurofound, 2015; Fisher & Wood, 2012; Gregory et al., 2017; Lashley et al., 2020; Pianta et al., 2008; Potter & Hodgson, 2007; Semple-McBean & Rodrigues, 2017).

Observation about the positive impact of video-recorded teaching is a stimulant of this investigation. Understanding the experiences with virtual practicum could give a sense of how to deliver in a future crisis that could impede face-to-face or campus-based teaching and offer insights into elements that could be retained to improve and expand practices in a digital age. One of the most recent publications about responses to the challenges of COVID-19 in higher education in Caribbean countries such as Guyana highlights the importance of instructional and assessment system reforms with the capacity to "bring them more in sync with the digital age and the world of artificial intelligence and virtual reality in which students live and for which higher education should be preparing them" (Griffith, 2023, p. 3).

3. Research Questions

The overarching question addressed in this paper is, 'What can we learn from the e-based practicum utilised during the COVID-19 pandemic to make experiences more effective in the post-pandemic era?' The subsidiary questions are:

1. What can we learn from the experiences and feelings of student-teachers concerning the delivery of e-based practicum?

2. What adjustments and modifications can UG make to improve the effectiveness of e-based practicum, if any?

3. Can e-based practicum be adapted as a sustainable approach to making positive pedagogical differences in today's evolving education era?

4. Methodological Considerations

4.1 Data Collection and Analysis Protocols

This study employed the descriptive survey approach to present an understanding of the phenomenon of interest and issues as experienced, lived, or interpreted by the participants (Nassaji, 2015). The survey allowed the student-teachers in the Division of Education at UG to share their experiences about e-based practicum during and after the pandemic. By using both open and closed questions, this method allowed more students to participate in producing knowledge that described the situation regarding e-based practicum and offered the opportunity to gather data that would contextualise the tabulated data and explain meanings and interpretations (Nassaji, 2015; Ololube, 2006). Further, the descriptive survey allowed students to share in-depth thoughts and embedded feelings about their experiences (Lashley et al., 2020). The survey was placed online using Google Survey at the end of the 2019/2020 and 2022/2023 academic years (August 2020 and July 2023). Students were given two weeks to complete the survey. Email reminders were sent one week and two days before the survey closed. To ensure that final students of faculty completed the questionnaires, email addresses were needed to access the Google questionnaire, which, upon verification, were deleted.

The survey focused on four critical areas generated from informal comments and concerns by student-teachers, discussions with practicum supervisors, and what the literature has to say about the impact of COVID-19 and

adaptation by educational institutions. These are framed as:

1. Desirable aspects of e-based practicum,
2. Less favourable aspects of e-based practicum,
3. Exploring solutions for improving e-based practicum, and
4. Prospects for e-based practicum in the post-COVID-19 era.

Interpretation of closed responses capitalised on the automatic integration with Google Sheets using frequency counts, percentages, and statistical commentaries. Braun and Clarke's (2006) approach to thematic analysis was applied to the open-ended responses to generate trends and patterns within the sensitising categories: desirable and less desirable aspects of e-based practicum, exploring solutions, and prospects for e-based practicum. The first author generated the early phase of coding. The second author re-examined and re-coded where necessary. Both authors agreed on the final themes and interpretations. Each author scrutinised the data for a second time to eliminate any single author's misrepresentation or inadequate conceptualisation of the themes. Where relevant, comments by the respondents are placed as vignettes and quotations to support the claims made and offer details to facilitate shared interpretations.

4.2 Data Source

The data for this study was sourced from two hundred and forty-one (241) registered final-year practicum students. These students represented those registered during the sudden introduction of e-based practicum in the 2019/2020 academic year and those who experienced e-based practicum after COVID-19 restrictions were lifted in the 2022/2023 academic year. They included those pursuing bachelor-level teacher education programmes in Early Childhood, Primary, Literacy and Secondary across the two UG campuses. The main campus at Turkeyen was established in 1963, and Berbice, which is smaller, was established in 2000. All the participants are designated trained teachers who have completed training at the Cyril Potter College of Education (CPCE), Guyana's national institution, for initial post-secondary teacher training.

Given that the total number of students registered for practicum during the two academic years was 729 (Turkeyen 586 and Berbice 143), the 241 participants represent a response rate of 33.1%. The disparity in the response rate across the campuses was slight. Turkeyen campus recorded a slightly higher rate at 33.4% (n = 196), while Berbice recorded 31.4% (n = 45). Recent research about response-rate value by Holtom et al. (2022) indicates an increasing trend in academic studies (48% in 2005 to 53% in 2010 to 56% in 2015 and 68% in 2020) due to factors such as researcher-participants' relations and electronic questionnaires that requires only the click of a button. While similar increasing trends were not achieved (which may have resulted from the email verification requirement), our study does not see a high response rate as a definer of data saturation or a threat to quality. For our research, the respondents needed to be diverse in attributes, such as their range in years of experience and different geological areas, for the data to be considered representative and appropriate.

The gender, age and programme of study reflect the distributions of students in the Division of Education. Of the 241 participants, 233 indicated their gender: 88% females, 11.6% males, and 0.4% transgender. The other demographic categories attracted responses from all 241 participants. The age groups fall within the following categories: 19-24 years (7.5%), 25-30 years (44.8%), 31-36 years (26.9%), 37-42 years (12.9%), 43-48 years (5.4%), 49-54 years (2.5%). Concerning the responsibility for taking care of their families, 65% (n = 157) indicated they were. The highest number of responses were offered by Primary teachers (39%), followed by Early Childhood (30.3%), Secondary (28.2%) and Literacy (2.5%). With regard to areas of residency, a significant proportion (77.2%) recorded rural or non-city as the locations that best describe the places where they work. More than half (59.8%) identified rural-coastal/land/road (Rural-CLR), and 17.4% rural-river/lake/creek/interior (Rural-RLCI). The urban locations, which include city and town, were represented by 20.3%, and suburban areas by 2.5%. This urban-rural distribution reflects Guyana's population and housing census (Bureau of Statistics Guyana, 2018).

5. Findings and Discussion

The experiences shared by the student-teachers are captured within four thematic categories: (1) Desirable aspects, (2) Less favourable aspects, (3) Exploring solutions, and (4) Prospects. Tables 1 to 3 and Figure 1 summarise the themes. Theme descriptors and the number of respondents from which they emanated are also presented.

5.1 Desirable Aspects of E-based Practicum

Table 1 shows that among the desirable aspects of e-based practicum, the personal preference of student-teachers

secured the highest number of responses (n = 209). From the descriptors shared, the convenience associated with learning from the comfort of home received the most frequency of responses with remarks such as, " I like the fact that I can be in the comfort of my home and be engaged in classes which will enable me to save transportation fees that can go towards paying my UG fees" (Berbice ECE, Rural-RLCI, 25-30-Year Female). Student-teachers also seem to enjoy the peace of mind accompanied by decreased anxiety which is associated with the physical presence of supervisors, "The fact that my supervisor is not seated in my classroom to observe me teach bring[s] me great joy" (Turkeyen Primary, Urban, 37-42-Year Female). These findings suggest that educational initiatives such as e-practicum accelerated, transformed and expanded opportunities for teaching and learning as well as data collection, research and experimentation with traditional pedagogical approaches (Mingot & Marín, 2024).

Moodle was integral to the new mode of teaching and learning. The adequacy and functionality of the University's Moodle platform attracted the second-highest number of favourable responses (n = 203). The Moodle platform enhanced resource pooling and data gathering during the practicum experience and exercise, which fuelled improved practicum experiences for the teachers in training. Teachers found this an opportunity to experience being assessed with technology for increased objectivity, which, according to Garcia et al. (2024), makes teacher training experiences more efficient and functional.

The theme "partnership and equitable relations" was coined from 176 respondents who shared experiences suggesting that these were admirable features of e-based practicum. The responses from a 25-30-year-old Secondary female from Berbice are recorded as an example: "In terms of the activities I did with the children, my supervisor showed me how to allow the kids to come up with ideas about the lesson, instead of [me] giving them the ideas directly to work from". Criticism from supervisors who were kind and respectful was also flagged as admirable. Student-teachers seemed to be especially appreciative of engagements about what, why and how aspects of teaching went well or did not and how to improve. This is an essential piece of finding that shows how partnership and equitable relations can be facilitated through technology by enhanced information-sharing practices, which are documented without prejudices and biases, thus improving the efficacy of practicum (Karkar-Esperat & Bahlmann-Bollinger, 2023; Jarke & Breiter, 2019; Lashley, 2017; Sinha, 2021).

Effects of e-based practicum on student-teachers' performance were explicitly stated by two-thirds (n = 159). The responses surrounding performance pacing and gauging cut across all demographics and expanded by comments such as "I get to do my video over and over until I got to perfect version" (Turkeyen Primary, Urban, 31-36-Year Female). When the intention was not "perfection", student-teachers acknowledged the opportunity to review strengths and weaknesses in their teaching: "The recordings can be reviewed by us for strengths and weaknesses before submission and can also be redone if necessary" (Turkeyen Secondary, Rural-RLCI, 19-24-Year Male). Reflection on practice, a critical element of teacher education and development (see Downer et al., 2009; Gregory et al., 2017; Karkar-Esperat & Bahlmann-Bollinger, 2023; Semple-McBean, 2016; Trivette et al., 2012) was also promoted. One participant recalls how the video recording encourages reflection and promotes a deeper understanding of practice: "When I looked back at [rewatched] my videos, it helps me to rethink my strategies and improve my techniques in the classroom (Berbice Secondary, Suburban, 25-30-Year, gender not stated). This is evidence that technologies, in combination with adaptable pedagogical strategies and reflective practices, help teachers transform learning spaces and experiences (European Commission, 2020; Winter et al., 2021).

Pedagogical growth is the ultimate expected outcome of e-based practicum (Trivette et al., 2012), and 49% (n = 118) identified this with remarks such as: "My supervisors discussed how to teach subject-verb agreement to learners with special needs ... I also learnt about a better approach to ensure learners recognise the placement of the 's' marker for verbs (Turkeyen Secondary, Urban, 37-42-Year Male). As observed in Table 1, many aspects of pedagogical growth are recorded. A focus on growth and development in skills and competencies has been shown to keep students engaged and motivated (Semple-McBean & Creighton, 2018). The student teachers were excited to see the live record of their pedagogical growth and expressed how it motivated them to continue refining their skills in pedagogy.

Mentionable, the philosophy of 21st-century learning, which assumes that education must help sustain society's values while responding adequately to current and future rates of change, was another desirable outcome. Similar to recent studies (see Adekannbi & Ipadeola, 2024; Atmaca, 2023), many students reported their appreciation of technology literacy skills learnt from participating in e-based practicum: "I am now a pro at making videos, I learned how to capture the perfect sound and images, and I could now edit and convert large file …. I now do recordings for all my relatives' events (Berbice Primary, Rural-RLCI, 25-30-Year Female). The students' enthusiasm and appreciation for their growth are encouraging, given that a consistent problem in virtual teaching

has been the challenge of keeping students engaged and motivated (Bergdahl, 2022; Contreras-Castillo et al., 2004; Xu et al., 2020). E-based practicum offers the edge students need to grow their pedagogical repertoire, thus improving their motivation and ability to engage and connect with their learning.

Table 1. Desirable aspects of the e-based approach to practicum

Most Liked	Example/Descriptor	No. of Respondents
Personal Preference	Convenience such as learning from the comfort of home; More family time instead of time travelling to campus; Cost-effectiveness/financial savings on transportation to campus; Avoidance of long distances of travelling; Lack of hassle in terms of transportation; Additional time to study and complete assignments that would have been taken up with commuting; Freedom to attend class from various locations; Confidence building; Permits personal independence; Less nervousness as supervisors are not physically seated in the classroom	209
Practicum Platform	Accessibility of recordings which were not available during face-to-face; Recordings of detailed supervisor's feedback rather than just short comments in the post-observation report; Recordings of sample teaching; Course materials posted at the beginning of the course; Flexibility in reading materials posted at one's own time	203
Partnership and Equitable Relations	Kind criticism from supervisors about what, why and how aspects of teaching went well or did not go so well, and how to improve; Open conversation with supervisors about feelings about performance; Better attendance and punctuality of both supervisors and students; Opportunity to post questions or concerns to the supervisor at any time on the platform; Interactive reviewing of teaching videos; Very encouraging and helpful supervisors; Self-videoing and reviewing own teaching; More interaction than face-to-face; Less intimidating; Video and zoom seem more effective since the presence of supervisors distracts children	176
Performance Pacing and Gauging	Opportunity to make adjustments during the video production process; Flexibility in having lessons done at one's own pace; Time to practice and improve on teaching before making videos; Reduction in face-to-face observation leads to sufficient time to complete lessons without a feeling of nervousness or mental breakdowns; Minimise delays (e.g., lessons can be taught without having to wait on supervisors' visits); Recordings can be reviewed by the student-teacher; Repeated views during video preparation permits strength and weakness checks; Conducting lessons at times most suitable and convenient encourages a more comfortable feelings	159
Pedagogical Growth	Introduction of lessons; Delivery of student-centred, fun and interactive activities; Time management; Student involvement and participation; Questioning techniques (e.g., to help children think critically); Lesson planning and evaluation; Classroom setting/layout and control; Reflections on teaching: Lesson transition; Differentiated instructions; Use of practical and hands-on activities; Methods to re-engage distracted children; Engaging special needs children; Grouping techniques; Tone of voice; Alternative activities to worksheets; Different approaches to assessment; Praising using different words and approaches; Field trips; Peer teaching; Discovery, inquiry-based and co-operative learning; Subject Integration; Learning beyond course content (e.g., video applications)	118

Allowing the student-teachers to reflect and build self-correcting capacities (Semple-McBean & Rodgigues, 2018) is also noteworthy. We believe that Bailie et al.'s (2021) narrative about four interpretations of reflective learning captures and accounts for why some student-teachers reported experiencing much growth in their professional practice.

> [First] reflective learning is viewed as involving critically interacting with course content…. While targeting the content, the process may involve critical reading responses, interpretation of the meaning of content, and relating ideas and theories to personal experience and knowledge. The primary aim in this category is to enhance students‟ understanding of the content dealt in the course. In the second category, improving professional practice, reflective learning targets professional practice. Through both anticipatory and retrospective reflection, the aim is to improve one's practice such as teaching. Identity development characterizes the third conception of reflective learning. In this category, the process of reflection involves examining one's background experiences, biases, assumptions, strengths, and weaknesses with the aim of becoming aware of oneself and developing their professional and personal identity. The fourth category focuses on broader systems and structures with the purpose of developing critical consciousness about how they affect the lives of individuals and groups. (p. 112)

Regarding the overall desirable aspects of e-based practicum, many participants agreed that the practicum met their expectations and prepared them to offer children better and more developmentally stimulating instructional support. The impact of e-based practicum, as displayed in Table 1, is wide-ranging, cementing its merit for retention as "a flexible and convenient alternative" (Karkar-Esperat & Bahlmann-Bollinger, 2023, p. 13) in this post-Covid-19 era.

5.2 Less Favourable Aspects of e-Based Practicum

Malm (2009) echoed that teacher training programmes need to focus more on objectives such as promoting conflict literacy, self-awareness, empathy, leadership and collaborative skills. In other words, teachers' training should consider not only the cognitive but also the practical, social and emotional aspects of human development. The sudden implementation of and transition to virtual learning did not permit much time to consider many basic personal needs and challenges (Adekannbi & Ipadeola, 2024; Atmaca, 2023; Oyedotun, 2020). At 68 responses, personal obstacles were most frequently reported as the least favourable aspect of e-based practicum. Since online sessions are usually held after school hours when many student-teachers are at home, the inability to work in quiet and undisturbed spaces posed a problem for some. Family responsibilities were also a concern for many attending classes from home, and 65% recorded being responsible for caring for their families. More students with families reported financial challenges associated with studying and attending classes online.

Table 2. Less favourable aspects of the e-based approach to practicum

Disliked	Example/Descriptor	No. of Respondents
Personal Obstacles	Noisy and inconsiderate family members; Family responsibilities; Distracting home environment; Technology illiteracy; Loud music and noise in the community; Limited funds to purchase data; Travelling long distances to access the internet	68
Technical Problems	Internet access and connectivity issues, Sudden/unscheduled power outages; Problems uploading/posting videos; Outdated/inappropriate devices for the making of videos (e.g., poor sound, lighting, capture range)	61
Self-consciousness; Confidence Issues	Feelings of awkwardness talking and responding to oneself during mock teaching; Nervousness teaching under cameras since mistakes could be recorded; Appearance on camera (e.g., not liking how I look in the videos)	47
Quality of Feedback and Guidance	Limited meetings with supervisor (e.g., after the first session supervisor wasn't heard from again); Not getting timely feedback; Limited real-time feedback; No or irregular remarks/feedback about lessons uploaded; Inadequate guidance (e.g., my supervisor never discussed how I can improve my lessons to score better); Unfairly marked for poor video production (e.g., due to outdated devices); Awarding of grades without feedback such as strengths and shortcomings (e.g., I got an 'A', but I am not aware of my weaknesses, which I think is not right); General group feedback instead of individualised (e.g., My practicum supervisor shared general feedback in the form of a voice note based on all her students' lessons … We never had a one-on-one session and when we met generally the supervisor gave brief discussions about the course outline and the assignments)	44
Impersonal Nature	Not being able to meet supervisors face-to-face; Not being able to be in the class with peers; Some staff never or seldom put on their cameras; Not being able to have physical in-classroom interactions; Less interaction; No one-on-one sessions; Inadequate amount of supervision time	19

A smaller group of respondents raised concerns about their illiteracy and lack of experience with some computer programmes and software. While these personal issues might not align with pedagogical practices, they relate to issues which research has shown can impact the learning outcomes of the students pursuing university training virtually (see Adekannbi & Ipadeola, 2024; Atmaca, 2023; Eyles et al., 2020; Huang et al., 2024; Peterka-Bonetta et al., 2019). It also reflects the criticality of supporting the skill set and social and emotional aspects of the human who is to become a professional teacher (Malm, 2009).

The second significant challenging aspect of e-based practicum was technical and infrastructure problems. The data revealed that nearly one-quarter indicated experiencing technical issues while engaged in e-based practicum. The inability of the UG Moodle platform to accommodate videos larger than specific sizes required alternative submissions, such as conversion to YouTube. Such conversions were not always easy, as explained: "Whenever the lessons are over 15 minutes, it takes very long to upload on YouTube, and the quality gets distorted, and we are marked unfairly for that" (Turkeyen ECE, Rural-CLR, 19-24-Year Female). Other technical issues beyond student-teachers' control include internet access and connectivity issues, outdated or malfunctioning devices, and

national infrastructure failures such as sudden and frequent power outages. This finding signals a broader local and international concern as national infrastructural failings have been documented elsewhere (see, for example, Adekannbi & Ipadeola, 2024; Atmaca, 2023; Oyedotun, 2020).

Responses relating to being self-conscious and lacking confidence in one's skills in teaching and/or producing videos were also common. However, the student-teachers did not identify specific reasons or offer diverse descriptions for this theme; instead, many one and two-word remarks were offered (e.g., shyness, nervousness, self-doubt). Cross-examination of the item that required sharing views about aspects of e-based practicum that they do not like revealed that this group generally disliked video recording of themselves or preferred in-person supervision and assessment. The preferences for traditional pedagogical approaches over contemporary technological approaches can reflect their consciousness within the classroom and impede their confident use of technology in educational settings (Jarke & Breiter, 2019; Lashley, 2017; Sinha, 2021). For example, one 19-24-year-old ECE participant from Berbice who identifies as a suburban female had this to say: “I did not like anything about the course being online … only the teachers who could drama [perform] well and make great videos got good grades”. This also highlights the importance of merging traditional pedagogical approaches with innovative technologies, and e-practicum could be a place where teachers enhance such skills.

While only 18% of participants offered remarks about the quality of feedback on video recordings and general supervision, this theme attracted the most exemplifiers for the less favourable aspects of e-based practicum. Table 2 vividly illustrates why the feedback or guidance from supervisors was not always helpful, and the following remarks from two participants about their disheartening experiences offer deeper insights:

> My supervisor provided no further guidance besides what was outlined in the course outline, gave no feedback on lessons taught, seldom held discussion sessions, and did not advise on areas for improvement. Overall, the delivery of this course was very poor! (Turkeyen Primary, Urban, 37-42-Year Male).
>
> This is about the project teachers in the Early Childhood programme should complete. We had little to no guidance, and monies were mostly coming from the trainee teachers' pockets…. Grading a student without feedback is terrible. I would prefer thorough feedback on my shortcomings to improve my teaching delivery (Turkeyen ECE, Rural-CLR, 19-24-Year Female).

Similar shortfalls surrounding teacher supervision have been flagged in Guyana by Semple-McBean et al. (2024). Our report's findings indicate that practicum supervision at UG shares commonalities with Semple-McBean et al. (2024). Some supervisors might not be engaging student-teachers in a manner that could produce the desirable developmental and pedagogical outcomes. This observation was more evident in remarks offered by students attached to Turkeyen. This observation also highlights situated subjectivities within the practicum process despite its design for objectivity and transparency. These subjectivities are rare and do not seem significant in affecting the outcome of the practicum process. Nevertheless, in light of research which shows that supervisor feedback remains one of the most highly appreciated features of practicum and key for propelling good teachers and advancing teaching careers (Atmaca, 2023), the findings of our study offer opportunities for engagement and further exploration.

The final theme emanating from the responses to the less favourable aspects of e-based practicum relates to the impersonal nature of sparse socialisation and person-to-person engagements. Negative feelings about the absence of face-to-face socialisation remain a concern for a small number of respondents (n = 19). As observed in the study by Atmaca (2023), this group of student-teachers indicated they missed the face-to-face social experiences with other students and supervisors. What seems to make the experience even worse is that some supervisors did not turn on their cameras. A 25-30-year-old male Secondary student from Berbice commented: “I've completed a whole course, and I still do not know what the person looks like who taught it.” Therefore, as UG continues to transform online delivery, the isolation and loneliness sometimes constituted by e-based learning and described by researchers (Bergdahl, 2022; Contreras-Castillo et al., 2004; Peterka-Bonetta et al., 2019; Xu et al., 2020) would need to be eradicated or minimised.

Concisely, the personal obstacles and technical issues encountered by student-teachers in the e-based practicum point to the potential for strengthening support systems. Emerging studies are shedding light on the need to address challenges such as the cost of data subscription, network disruptions, and distractions from family and friends (see Adekannbi & Ipadeola, 2024). The cautionary note about the potential negative impact of assigning grades without accompanying suggestions and recommendations is also a call for improvement, as demonstrated by Semple-McBean et al. (2024). Affirmative answers to an important question about teacher training have also been achieved, “If teacher educators listen carefully to the students they teach, is it possible that prospective teachers will teach us how to teach them? (Mueller & Skamp, 2003, p. 428). This section presents a hopeful

outlook, suggesting that remedial interventions can enhance the e-based practicum's effectiveness in the post-COVID-19 era.

5.3 Exploring Solutions

Table 3 summarises the recommendations suggested. A return to some amount of face-to-face supervision and visits is foremost. Many student-teachers believe that it is only through face-to-face visits that certain competencies and elements of pedagogy can be observed and assessed. The most frequent recommendation suggests at least one face-to-face session per semester. This was followed by suggestions similar to those of Boffelli et al. (2021) about "practical topics in the traditional setting and theoretical ones in the online setting" (p 11). The third recommendation centred around the need to make the process of video production and uploads less burdensome. Attention to effective feedback is another consideration, especially regular feedback that could lead to professional growth and development (Karkar-Esperat & Bahlmann-Bollinger, 2023, p. 12). A model or framework for e-based practicum has also been a recurring suggestion, especially for student-teachers who perceived that their performance was unfairly assessed:

> I do not like that some students are able to do only videos and mock teaching while others have a mix of on-site visits. It should be even. Maybe two classroom visits and one online video or some other decision to ensure that everyone is fairly assessed. (Turkeyen ECE, Urban, 43-48-Year Female).

Table 3. Exploring solutions to problematic elements of the e-based practicum

Practical Solutions	Example/Descriptor	No. of Respondents
Compulsory Face-to-Face Sessions	At least one face-to-face visit is required (e.g., It would be beneficial if supervisors visit even once to see them teach because videos miss important things); In-person assessments of teaching should be compulsory (e.g., General meetings and discussion should be done online, but assessment should be in school); Where possible, visits should be made to observe the developmental project;	76
Video Production	Videos should be longer than 8 minutes; Provide guidelines for editing videos for those who are new to technology; Moodle platform should allow for large file uploads	51
Effective Feedback	Regular one-on-one feedback; Placement of feedback on Moodle platform; Timely and constructive feedback (e.g., Continued communication with students to assist them in building on their weaknesses into strengths); Feedback on work should be before final grading; Feedback on ways to improve your lesson before delivery; More zoom meetings must be done individually	31
Revisiting Assessment Model/Framework	The first set of recorded lessons should not be graded; Before the actual teaching, lesson plans should be discussed; More effective instructions and guidance to promote balanced/fair assessment; Demonstration of teaching by supervisors; More regular meetings between supervisors and students to address students' needs; More active engagement by supervisors	24
Screening of Supervisors	Change/removal of supervisors; Supervisors need to show kindness and patience; Identify supervisors willing to spend more time teaching the course (e.g., hire persons who don't have pack schedules and other demanding jobs); Supervisor should be knowledgeable about the updated national curriculum	12

The final recommendation for enhancing the outcomes of e-based practicum is to reassess the selection criteria for supervisor appointments. The teachers involved in the study have expressed concerns that the screening process might not be stringent enough. Once these proposed solutions and recommendations are implemented, the future of e-based practicum could be promising, offering a viable and effective approach to practicum.

5.4 Prospects for e-Based Practicum

This item was formulated out of concern about the sustainability and feasibility of e-based practicum. When we began this study, there was limited literature about the role of e-practicum in teacher training, and recent studies suggest it might not yet be favoured by student-teacher (see Adekannbi & Ipadeola, 2024; Atmaca, 2023). For example, Atmaca's (2023) study from Turkey, which shares some structural technological concerns with Guyana, summarises the prospect of online practicum as follows:

> […] Based on the relevant literature and the current study findings, the general impression is that although both face-to-face and online teaching practicum possess unique opportunities, face-to-face teaching practicum appears to be superior. Thus, face-to-face teaching practicum is claimed to be irreplaceable by

alternative online platforms. (Atmaca, 2023, p. 367)

The findings for Guyana did not assign face-to-face a superior status. Instead, our findings align more with the practice of "virtual field experiences", reported by Karkar-Esperat and Bahlmann-Bollinger (2023), which found that although some teacher educators feel uncomfortable teaching in this mode, the positives outweighed the negatives. Karkar-Esperat and Bahlmann-Bollinger (2023) argued that it remains a flexible and convenient alternative in the post-COVID-19 era. Figure 1 displays almost two-thirds (66.3%) of the respondents to this item preferred a blended approach to teaching, learning, and practicum supervision. In contrast, 25% and 8.7% stated that they preferred only online and on-site.

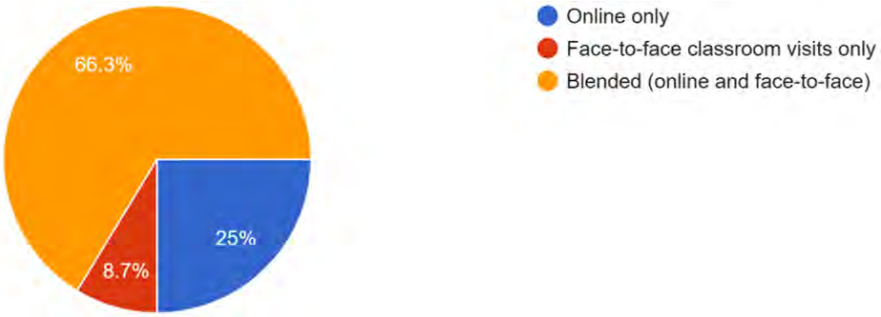

Figure 1. Approach preferred for future practicum courses

The 25% of the respondents who indicated a preference for only e-based practicum were amongst the respondents who reported on issues such as the late arrival of supervisors and distraction associated with supervisors in their classrooms. The 8.7% with a preference for on-site face-to-face practicum supervision highlighted issues similarly reported by Adekannbi and Ipadeola (2024), Atmaca (2023), and Karkar-Esperat and Bahlmann-Bollinger (2023). Student-teachers who were more inclined to use this option were among those who reported that they missed face-to-face interactions with students and staff. These students prefer to learn in social settings that facilitate physical socialisation and interaction with peers, supervisors, kinaesthetic learning material, and a physical learning environment. These are also students within the group who indicate that their home environment is challenging and not conducive to supporting their learning or who constantly experienced technical or infrastructural problems and personal obstacles during the delivery of e-based practicum.

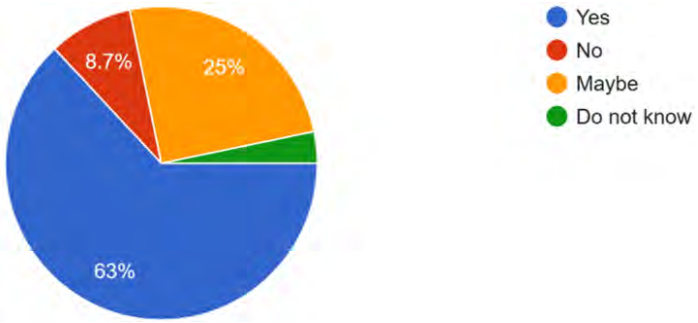

Figure 2. Willingness to serve as tutors for e-based practicum after graduating

With a significantly high number (91%) of student-respondents signalling a preference for the retention of many of the elements of e-based practicum, the future of this course seems indisputable. Figure 2 shows that human resource support might also be plentiful, as many student-teachers who have experienced e-based practicum seem willing to return as tutors for this course after graduation.

6. Conclusion

The student-teachers' practicum experiences were positive when they had adequate resources in conducive environments. Their preferences, areas for improvement and ways to support them when they encountered challenges and obstacles were highlighted and defended/justified. Consistency in responses was observed across all demographics and among those affected by the sudden introduction of e-based practicum in the 2019/2020

academic year and those who experienced e-based practicum after COVID-19 restrictions were lifted in the 2022/2023 academic year.

Prior to COVID-19, practicum within the Faculty of Education and Humanities at UG relied principally on campus-based tutorials/teaching clinics and on-site observations. It employed the method of notetaking and recall to guide post-conference discussions. E-based practicums, particularly videos, extend past practices and move practicums to be more in sync with the digital age. Videos offer data that facilitates supervisors' and students' reflection and review on each aspect of the lesson experience. With videos, there is no direct reliance on recall; instead, the videos allow for a direct return to observe the exact moment in the pedagogical encounter. Focusing on a moment in the video when a teachable opportunity presented itself (lesson within a lesson) can be capitalised on without disrupting the children's experiences or lesson delivery. The evolution and use of digital educational platforms during COVID-19 accelerated, transformed and expanded opportunities for teaching and learning as well as data collection, research and experimentation with traditional pedagogical approaches (Mingot & Marín, 2024). The UG has enhanced data gathering during the practicum experience and exercise for student-teachers, fuelling alternative experiences and practicum approaches.

On the other hand, teaching and learning in virtual spaces has its challenges. The participating students highlighted some of the challenges which were exacerbated by the sudden switch to e-based practicum. As established internationally, nothing recently like the COVID-19 pandemic could have prepared UG for a sudden disruption to the normal delivery of its programmes. According to Eyles et al. (2020), the sudden closure of educational institutions has reduced instruction time and negatively impacted educational achievement. For the 2019/2020 cohort, the transition was sudden and more challenging, especially in the absence of face-to-face socialisation. Socialisation is vital in education development, and its absence seems to have limited some student-teachers' knowledge and skills. Limitations in the knowledge and skills of teachers, educators and administrators negatively affect the learning experiences of children (Chetty et al., 2011; Dunlosky et al., 2013; Korpershoek et al., 2016).

While students stated that access to computers and related electronic devices and connectivity issues continue to be a challenge, the UG's attempt to change the trajectory of access to e-based practicum platforms for its staff and student-teachers as a means to support the continuity of programme accessibility and delivery is commendable. The UG supports Aljawarneh's (2020) and the OECD's (2020) statement that there are opportunities in digital technologies to support the continuity of curriculum delivery when physical access to campuses is disrupted. The findings suggest that the UG endorses using digital technology to determine what students learn, how, where, and when they learn.

We have learned that most student-teachers in Guyana favour e-based practicums, which could be an essential addition to the conduct of practicum courses going forward into the post-COVID-19 pandemic. This adds a positive outlook to university-level online learning approaches.

7. Limitations

Expanding the database would permit more substantial credibility for self-reported data. Future research could benefit from incorporating more participatory and observational approaches to expand the perspective on the teachers' experiences. To ensure that the data benefit from respondent triangulation, the practicum supervisors who work with the teachers could be invited to share accounts and experiences of the teachers' practices, growth and development. Multiple evidence sources, such as assessment records and reports, would permit more rigorous methodological triangulation. Mitigating a low response rate might be achieved by completely anonymous questionnaires for those who did not wish to associate their email addresses with the submission.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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