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# A Collaborative Video Annotation and Analytics Environment for Teacher Professional Development (CoVAAPD) in Physical Education

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CoVAAPD is a web-based tool that enables Physical Education (PE) teachers and their mentors to collaboratively view, annotate, and engage in rich reflective dialogue around design and enactment of PE lessons captured via in-situ lesson observation videos. A unique feature of the CoVAAPD is the time-point based annotations where users can add annotations at specific timepoints, share annotations with peers, review peer annotations, and view/receive mentor feedback. Powerful learning analytics modules (based on pre-specified pedagogical tags) are integrated to enable teachers and mentors to continuously monitor professional learning progress to enhance and augment face-to-face lesson observation feedback and practitioner reflection activities. Using design-based research with mixed methods, the current study aims to find out the extent in which a blended PD approach supported by CoVAAPD foster teachers' collaborative reflection around the effective design and enactment of PE lessons. Four schools (Primary – 3; Secondary – 1) and 31 teacher participants took part in the study. The reflection rubrics (Ward & McCotter, 2004) was adapted to assess the effectiveness of teachers' collaborative reflection. Three levels (technical, dialogic and transformation) showed positive and significance improvements ( $p < .05$ ) between pre and post trials. In addition, quantitative survey responses (Likert scale 1 - 7) towards the usability and perceived usefulness of CoVAAPD were positive ( $5.57 \leq M \leq 5.97$ ). Qualitative findings from teacher interviews illustrated that CoVAAPD was useful in obtaining and providing feedback, as well as refining practice. The teacher participants liked having the focused and specific discussions from the video annotations and pedagogical tags, which aligned with teacher actions in the Singapore Teaching Practice (Liu & Lim, 2018). Findings also revealed issues such as building a culture of openness toward feedback and relating to the learning analytics data.