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A Collaborative Online Micro: Bit K-12 Teacher PD Workshop

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ABSTRACT

This poster describes the use of online technology to deliver K-12 teacher professional development (PD) during the COVID-19 pandemic in Ireland. Traditionally these sessions are delivered in person, with a focus on hand-on activities, but the sudden changes faced by the closures in Ireland required an alternative approach for delivering these sessions. The PD session presented in this poster was a more technically challenging micro:bit workshop, which was delivered online using the micro:bit classroom. This is typically used as an in-class, one to many instructor tool, and trialing this as a PD collaborative tool, was a novel approach. This poster presents the delivery and methodology of the session, the collaborative online format, and feedback from the participants.

KEYWORDS

Computer Science Education; K-12; Outreach, Micro:bit

CONTEXT, PARTICIPANTS & METHODOLOGY

CSinc has been delivering teacher PD for the Computer Science (CS) Leaving Certificate (LCCS) subject for the past three years. The internationally popular BBC micro:bit device is used across the LCCS subject, and forms a core part of the CS PD delivery. The delivery of this training typically centers around classroom based demonstrations with hands-on development workshops. In March (2020) all schools and universities in Ireland were forced to close due to the COVID-19 pandemic. CSinc had a number of upcoming teacher PD events planned, one of which was a micro:bit session, which was adapted to run online.

The micro:bit session was not a typical session as the topic was sorting algorithms using lists. The session planned was to include group work to solve the sorting problem's as part of a collaborative team. This was a pilot study for two reasons, first a pilot for online teacher collaborative PD, and second, a pilot using the micro:bit classroom environment as a collaborative online PD tool.

Initially 36 teachers signed up for the session, with seven participating on the day. The timing, within several days of a national lock-down, most likely significantly impacted the attendance. The average age in attendance was 41 years and the participants had previously attended on average 4 other sessions with CSinc. Of those attending 50% taught on LCCS and 50% taught on Junior Cycle coding. First, all participants attended an online meeting and the sorting algorithm (bubble sort) was presented. The teachers were then randomly divided into two groups of three with dedicated CSinc members supporting each group. The groups were allocated 60 minutes to solve the sorting problem on a micro:bit, collaborating using the micro:bit classroom. At the end, all participants rejoined a single meeting and the solution was discussed. To the authors knowledge the micro:bit classroom has never been used as a teacher collaborating tool.

RESULTS & CONCLUSIONS

CSinc have developed pre- and post PD surveys as part of a longitudinal study [1–3]. The survey was tweaked to take account of the new online session format. The pre-survey collects demographic and psychological data on participants including, their CS teaching, their CS training, their self-rated self-efficacy in programming. The post-survey takes feedback on the session, specifically how they rate their programming self-rated self-efficacy after the session, as well as feedback on the online nature of the session. The pre- and post- surveys collect both qualitative and quantitative data. Generally the online nature of the pilot session was welcomed for reasons such as, no travel costs, being able to continue teacher PD in spite of COVID-19 and the desire to become familiar with the online tools. For example, 66% of attendees were more interested in attending because the training was online and 83% felt that they could keep up with online delivery as much as onsite delivery. Interestingly the comments in relation to the collaboration were diverse. A positive reporting was that teachers experienced what the students might during an on-line collaborative session and this may help them in their online class development. One participant found the collaboration challenging and unrewarding. Some feedback did highlight the learning curve for the online technologies used as well as the inherent difficulties in collaboration online as opposed to face to face. The poster will present further details on the methodology and findings of this pilot collaborative micro:bit PD session. With a preliminary finding that this approach using the Micro:bit Classroom may be a viable and timely solution for delivery of on-line teacher PD, in the unprecedented current climate.

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