

Plotting through the pandemic

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Why was the idea necessary?

The COVID-19 pandemic led to the closure of educational institutions across the globe to limit its spread. The loss of contact teaching necessitated the need for development of teaching and learning resources, which could be used where emergency remote teaching (ERT) was adopted. With limited time and variable accessibility of students and teachers to educational resources, these resources needed to encapsulate core knowledge and skills, such as the completion of the partogram (a labour management tool) and gravidogram (a pregnancy growth chart).

The partogram and gravidogram are essential components of the maternity case record, which is a patient-held record used for all pregnant women in the public health sector in South Africa. These pregnancy and labour monitoring tools allow the early identification and management of problems in pregnancy and labour. The World Health Organization advocates the use of the partogram in particular, as it has been identified as an effective tool to monitor labour and prevent obstructed labour.^[1,2] All students training to be maternity care providers must be confident and skilled in the use of the partogram, as its competent use has been identified as a means to reduce maternal and perinatal mortality.^[3,4]

What was tried?

A means was needed to provide teaching and training on essential tools used in the care of pregnant and labouring women. Teaching on the use of these tools was to be offered remotely and solely online to obviate face-to-face teaching. One educator and two final-year medical students created a website (www.obstetricgrams.co.za) that synthesised both the practical and theoretical components of the maternity case record. The practical components include the standardised partogram and pregnancy growth charts (gravidogram). These virtual charts were coded to be fully interactive on any device with a web browser and internet access that allows cross-platform access regardless of the device. Users can interact with these virtual charts as they would with a physical chart, i.e. they can plot the examination findings, write patient details and add comments. In addition, they can remove/refactor plotted data, change themes (light/dark mode) for better viewing, and download the completed virtual charts in portable network graphics (PNG) format. PNG supports lossless data compression, meaning that saving, opening and resaving an image will not reduce its quality. Users can harness this feature to submit their work for assessment, or simply save for later review.

The charts are constructed purely from code to minimise their size. The file size is ~250 kilobytes, which reduces the cost of access significantly, in addition to the 'offline' use that saving and downloading a chart allow. Furthermore, the person who wrote the coding for the resource tested the charts on a wide variety of screen resolutions to ensure usability across all types of devices.

The theoretical component consists of the 'Partogram Learning Hub' module, which contains summarised and up-to-date learning points

about labour and the partogram. The resource was compiled using the Intrapartum Care in South Africa 2019 Guidelines. The modules are also available to download for offline access in portable document format (PDF). This information is provided via a download function on the actual module. The guidelines used are also available for download via a link embedded in the module.

Expansions into the near future include additionally making them usable offline as desktop and/or mobile applications. Furthermore, users are not required to create an account to access any of the content, i.e. both the charts and theory.

Users can submit work, report bugs and provide feedback via the 'Contact Us' link in the website. This combination of a free, lightweight, integrated and online/cross-platform solution allows a hassle-free learning experience; please access the QR code for the web address and demonstration. In this current age of technology, students should find this approach to teaching both different from how this was taught previously and also generationally appropriate.

The lessons learnt

Expertise and abilities do not always reside with the teacher or their counterparts in the department, faculty or institution. Students have a wealth of knowledge and skills that can be harnessed not only to develop online learning materials, but also can provide feedback and critique the materials before use because they are ultimately the end-users. Teacher-student collaboration can lead to the development of appropriate and user-friendly learning resources. Teacher humility can open the doors to productive engagements to develop what would work for students in their learning. Working together between teachers and students, in developing resources for teaching and learning, can answer the question: 'This is what you need; how do you want it?' rather than: 'This is what they need; this is how I will do it.'

Despite the 'emergency' in developing the resource, formal evaluation of the resource is still outstanding, and this innovation does present an opportunity for further work to be done. Involving a larger group in the testing prior to the launch might have provided more user feedback, but this was not possible owing to the time constraints.

Developing the resource has made it possible to offer this type of teaching asynchronously, making it as accessible to as many students as possible, because they were not limited to specific times with which to engage with the material; this takes students' variable accessibility to reliable connectivity into account.

What will I keep in my practice?

Medical students, in particular, spend limited time in the labour ward, and consequently often need to maximise skills via other means. Creating a sustainable and easily modifiable teaching and learning resource that is applicable and of use to other disciplines and health science faculties, is an

indisputable way forward. The resource has been made available on social media and the departmental website for any student or teacher at any health science faculty or nursing college to use, for free.

Engaging with students in developing what best suits their educational needs can occur outside the formal educational milieu, and this should be actively sought. Diverse input perspectives promote the inclusivity, accessibility and appropriateness of educational resources, which should be encouraged when developing learning materials for students.

Formal learning objectives, assessment parameters and related desired outcomes must be complemented by ongoing, detailed student feedback in terms of teaching and learning material production and refinement. Furthermore, these resources need to be sustainable in terms of means of use, cost to the provider and user, and ease of editability and maintenance with, at most, minimally interrupted use when the site needs updating and maintenance. The ability to interact with a resource offline, even in part, is an important element of these considerations.

What will I not do?

Ignoring the skill and talent that exist within the student body to contribute to the development of educational resources cannot continue. There appears to be no need to revert to synchronous, face-to-face teaching of these core knowledge and skills elements of perinatal care.

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Evidence of innovation



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