PERSONAL VIEW

Teaching on the run: An X-tra tool

Justin Wen Hao Leong[*], Yu Bin Tan[*] & Bochao Jiang

Department of Gastroenterology and Hepatology, Singapore General Hospital, Singapore
*Co-first authors

I. INTRODUCTION

"Teach them this art, if they want to learn it, without fee or indenture; to impart precept, oral instruction, and all other instruction"- Hippocratic Oath

Since time memorial, the very act of teaching has been intertwined with that of being a physician. In so far that this tradition is found inscribed in the Hippocratic Corpus dating to the 5th century BC. Beyond a calling and a duty, the sharing of experience and expertise is also a rewarding aspect of our roles of doctors. In a climate of ever-increasing demands of knowledge and clinical load, it is imperative we hold on to this aspect closely, and simultaneously look to and embrace new mediums to assist medical educators to meet the current challenges. In this article, we share our experience on how we can incorporate X, formerly known as Twitter, as an extra tool to facilitate teaching on the go during ward rounds and promote self-reflection after.

II. THE MEDIUM

X is a leading social medial platform with up to 541 million monthly users (Musk, 2023). Users can create posts, with each post limited to 280 characters with spaces. The term tweetorial, a neologism combining "tweet" and "tutorial", is a consecutive series of posts that provide coverage of a given topic. One common format of a *tweetorial* involves the author creating a multi-post thread about a topic, providing a content outline followed by a brief discussion of the topic with links to various societal guidelines or papers. The user interface allows hashtags, images, and weblinks to be embedded into the posts.

Whilst some naysayers have decried the character limit by saying that it eschews complexity, conversely, it is precisely in the form of such brevity that makes it invaluable. For it is this very brevity that forces key information to be distilled in bite-sized teaching points (Breu, 2020).

Increasingly, physicians have been using the platform to disseminate research, share ideas and discuss topics. In the field of gastroenterology, popular hashtags include #Livertwitter or #GITwitter, with several physicians such as @drkeithsiau, @stevenbollipo, @AustinChiangMD from the United Kingdom, Australia and the United States respectively amassing followers of up to 118 thousand with each post on average being viewed thousands of times. The global scale and reach of X is undeniable; despite this, the posts remain personable and accessible, as readers are able to interact with the authors of these directly by liking, reposting, quoting, commenting or bookmarking them.

Whilst these have led to many discourses on the general use of social media in medical education, the 'how-to' of incorporating the use of X as a means of teaching on the run to residents and understanding its role in learning theory has not been expounded upon. In this reflection, we share how we can incorporate this medium in the immediacy of facilitating teaching on the run and the learning theories that underpin this.

III. SETTING THE STAGE

Teaching is a pre-planned learning activity, and even teaching on the run in a busy clinical setting can be planned. The crux as educators is firstly, to be keenly aware of the ever-evolving learning needs of our residents, and secondly, to amalgamate the two seemingly antithetical spheres of 'running to do' and 'pausing to teach' by having on hand an armamentarium of teaching posts that cover the gamut of core and common topics.

One way to be attuned to the learning needs of our residents is to refer to the programme-specific entrustable professional activities (EPAs). First introduced in the Netherlands in 2005, EPAs are discrete and professional core tasks that are speciality-specific. They are independently executable, observable in practice and measurable in output (Ten Cate, 2005). The EPAs clearly defines the need of the residents and across EPAs, span the breath of the content and desired outcomes after graduation from a specific residency programme.

For the educator, recognising the EPAs and imbibing the same shared mental model as our residents, coupled with pre-prepared content provides the chance to deliver a teaching point on a topic on-the-go whenever a given opportunity arises. The aim here is the immediacy of the educational intervention, to guide and stimulate learning in the here and now – to set the stage to seize the teaching moment.

IV. SEIZING THE MOMENT

Whilst covering the inpatient gastroenterology service, our team had a new admission – a young man with a history of chronic pancreatitis had just been admitted for complaints of abdominal pain. He appeared cachexic and was hunched up in bed in pain. After obtaining a history, performing a physical examination and ensuring that the appropriate investigations and medications were ordered, we came together for a short huddle. Just a few weeks prior, we had authored a *tweetorial* on chronic pancreatitis, covering the definition, pathophysiology, aetiology, diagnostic algorithm, imaging features and complications including pain, malnutrition, exocrine deficiency and cancer.

In the huddle, each member of the team came together, took out their smartphones and independently accessed the given thread on X. We then in a succinct fashion, embarked on a discussion of chronic pancreatitis with the *tweetorial* providing a scaffold for the discussion.

In cognitive learning theory, the locus of learning is the internal environment of the learner and his or her cognitive structures. The learner uses cognitive tools, including insight, information processing, perception and memory to lock-in the learning by assigning meaning to certain actions. One of the most important aspects of cognitive learning is the development of critical thinking through reflection. This process of reflection can either be a reflection 'on' action, where the learner reflects on a situation that has happened, or a reflection 'in' action where the learner reflects about the action in the moment, as they are performed. The core, here then, is in seizing the immediacy of such encounters, such that the reflection and synthesising of new knowledge will always be one of reflection 'in' action and allow the immediate synapse of what is gleaned to what is previously known.

Before we broke off our huddle to continue with our rounds, our residents could now articulate that more than a patient with a history of chronic pancreatitis presenting with abdominal pain, we had encountered a patient with hereditary pancreatitis with imaging features of pancreatic calcification, ductal lithiasis and intermittent Amman Type B pain who may benefit from a trial of neuromodulators. They then bookmarked the tweet for future reference, and within it, its attendant link to a clinical review paper on chronic pancreatitis for further reading.

V. REFLECTING AND PROPAGATING

Finally, our residents were encouraged to reflect on the topic towards the end of the day (reflection 'on' action) by reposting the thread on X and sharing their learning points with regard to the patient encounter and the topic. There were also encouraged to tag fellow residents in the team to further encourage discourse and craft their own new *tweetorials* on pertinent topics pertinent topics to maximise the use of X as a learning tool (Forgie, 2013).

The spirit of reflection the provides the transition from a cognitivist orientation to a humanist orientation of learning. Within this framework, learning is viewed as a personal act to achieve one's own full potential with goal that is self-directed and autonomous. This has three main characteristics, firstly, personal involvement by the learner, secondly, learning that is self-initiated, and lastly, learning that is self-evaluated. Taken together, the combination of these three reflects the growth of an independent learner.

The creation of *tweetorials* by learners thus fosters the development of additional knowledge translation skills by training the learner to first dive deeper into the topic, synthesise knowledge, distil it and lastly, package it with brevity (Tsang, 2023). The learner-created *tweetorial* then takes on a life of its own online, allowing its own interactions and comments allowing the student to engage in critical thinking and constructive feedback online which in turn transitions into self-evaluation.

VI. CONCLUSION

The traditional Bloom's taxonomy of remember, understand, apply, analyse, evaluate and create serves as a valuable framework for learning and X, if used appropriately, can be an excellent teaching tool to achieve these educational goals. Initially, the learner 'consumes' a tweet in a cognitivist framework, but by bringing the immediacy of the clinical encounter head-on into the screens of their smartphones, the use of X then fast tracks them into applying this new-found knowledge in the current clinical encounter. After the encounter, the learning then shifts into a humanist orientation with the vision of an independent, self-driven and self-critical learner that creates new work; and through this process, take their own steps toward becoming a teacher on the run with an X-tra tool.

Notes on Contributors

Justin Leong and Tan Yu Bin conceptualised the work, drafted the work, revised it and gave final approval of the version to be published. Jiang Bochao drafted the work, revised it and gave final approval of the version to be published.

Declaration of Interest

No potential conflicts of interests relevant to this article was reported.

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*Justin Wen Hao Leong
31 Third Hospital Ave,
Singapore 168753
Email: justinleongwenhao@gmail.com