

Editorial

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As professional civil engineers we should all be seeking continuous improvement in everything we do, including learning from the lessons and experiences of others. By making learning a habit and seeing everything as a learning opportunity, we will all serve society better and maintain our relevance for future challenges.

This continuous learning theme comes across strongly in our first paper, by Wenkenbach *et al.* (2022), who describe the replacement of a life-expired wharf at the UK's Rothera research station in Antarctica. Rather than simply wrapping a new wharf around the old one, dismantling the old rock-filled steel structure was seen as an opportunity to study its design and capture learning for eventual safe dismantling of the new wharf in 25 years' time.

The steel frame for the new wharf design was fabricated in the UK and delivered to site as 20 flat-pack prefabricated modules with telescopic legs. The team incorporated learning into both the planning for the old wharf removal and the new wharf design process by using three-dimensional visualisation and digital rehearsals of critical activities. Physical fabrication trials of the new wharf steelwork were also undertaken in the UK to confirm dimensional accuracy and fabrication tolerances, as well as the geometrical feasibility of the assembly. Learning from this process led to valuable weeks being shaved off the construction programme.

The learning theme continues in the paper by Tang and Chen (2022), who used digital simulations to assess the effectiveness of current infection control approaches in hospitals and explore how this could be improved. In the UK a fifth of confirmed Covid-19 cases and 89% of infected healthcare workers have been attributed to hospital-originated infections, much of which was due to insufficient separation between infected and non-infected patients.

The digital models simulated the flow of 200 patients and healthcare staff through typical and proposed hospital environments and modelled the number of on-site infections in each case. The paper concludes that Covid-19 presents the opportunity to learn how to minimise hospital-originated infections and cope with future challenges by adopting more flexible hospital design, with features such as movable walls, lightweight internal partitions, extra entrances and separations.

Zhang *et al.* (2022) then offer a different perspective on learning from projects, describing construction monitoring and load testing of a recently completed 120 m span pedestrian

suspension bridge in China. They point out that compared to other forms of bridges, suspension bridges have a statically indeterminate structure. Finite-element modelling of the full construction sequence was therefore essential to provide detailed stress and strain data that could be compared with on-site measurements. This ensured the bridge reached its design state when completed, as well as detected construction defects that could be corrected in real time.

Finally, learning on the design and construction of a new 2016 Sampreeti Bridge over the Hooghly River in Kolkata, India was of a more dynamic nature. While there were lessons from the adjacent life-expired 1887 crossing, Acharya *et al.* (2022) describe the further and rather more expensive lessons experienced during delivery of the new bridge. Design amendments were needed to increase the space within the main truss box section to allow in situ riveting, the bearing type was changed to avoid unwelcome stress in the structure, and caisson tethering was reviewed after one of the caissons was washed downstream twice. We can all learn from these incidents.

I wish all our readers a happy and successful new year and encourage you all to never stop learning.

References

- Acharya PK, Kumar A, Roy P, Ghose P and Ghoshal A (2022) Crossing the Hooghly River near Kolkata in India: a tale of two bridges spanning 130 years. *Proceedings of the Institution of Civil Engineers – Civil Engineering* **175(1)**: 42–48, <https://doi.org/10.1680/jcien.21.00043>.
- Tang K and Chen B (2022) How to develop more resilient hospitals through agent-based modelling. *Proceedings of the Institution of Civil Engineers – Civil Engineering* **175(1)**: 27–32, <https://doi.org/10.1680/jcien.21.00049>.
- Wenkenbach I, Meijer E, Roper A and Craigie S (2022) An innovative 'flat-pack' wharf: overcoming construction challenges in Antarctica. *Proceedings of the Institution of Civil Engineers – Civil Engineering* **175(1)**: 19–26, <https://doi.org/10.1680/jcien.21.00047>.
- Zhang K, Li D, Shen X *et al.* (2022) Construction monitoring and load testing of a pedestrian suspension bridge in China. *Proceedings of the Institution of Civil Engineers – Civil Engineering* **175(1)**: 33–41, <https://doi.org/10.1680/jcien.21.00116>.

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