

**REALLY GOOD STUFF**

# Interprofessional learning through 3D printing of assistive devices

## 1 | WHAT PROBLEMS WERE ADDRESSED?

Emerging technologies in the rehabilitative component of patient care in community settings continue to grow. One of the emerging technological fields in the health sciences arena is 3D printing. It is particularly useful in rehabilitation services in the production of assistive devices. Degerli et al.<sup>1</sup> define assistive devices, as any commercially developed, modified or customised system, component or product used to improve or preserve the functional capabilities of a person not able to engage in all their daily living activities. Currently, assistive devices are not easily customizable. Off-the-shelf devices do not meet the individual needs of the customer; they are costly, lack individual compatibility and not always in stock. In minimising these challenges, technologies of the Fourth Industrial Revolution (4IR) such as 3D printing have been offered as a practical solution at a local university in South Africa.

## 2 | WHAT WAS TRIED?

A collaboration developed between the University of the Western Cape (UWC), Cape Town, South Africa, and Winston-Salem State University, USA, assisted the institutions to enhance their knowledge of the 4IR through a 3D printing pilot project. The purpose of the project was to examine the usefulness of 3D printing in the production of assistive devices needed in community practice. Therefore, UWC third-year occupational therapy (OT) and physiotherapy (PT) students who were placed in a local community received training, which was conducted by the partner institution in the United States via Zoom. Training included the basics of 3D printing, understanding the different components of the printer, how to find free templates and a demonstration of the printing process. After completion of the training, the occupational therapist from the Department of Health assigned clients to the students who were working in the local community. The students accompanied Rehabilitation Care Workers on home visits to complete their assessments on the allocated clients and identified the need for assistive devices. In consultation with their campus-based lecturer, discussions were facilitated with the PT and OT students together on a weekly basis. This formed the basis for interprofessional learning where students could discuss their clients and their health-care needs in a collaborative manner fostering the understanding of


the roles and responsibilities of each discipline through interprofessional communication. Through these discussions, students found suitable assistive device templates on a free open-source website called Thingiverse which could easily be transferred to the 3D printing application called MakerBot Print. The students scheduled times to complete their printing and then issued their assistive devices to their clients before the end of the clinical fieldwork block.

## 3 | WHAT LESSONS WERE LEARNED?

The students found 3D printing very useful to improve the health outcomes of their clients in a short space of time. Learning with, from and about another discipline during clinical practice created an opportunity for students to work more collaboratively in a common community setting. Interprofessional core competencies were instilled within these students through engagement with each other in the training sessions and time spent with each other in the 3D laboratory. Although assistive devices are readily available through 3D printing, the process is quite time consuming for students while they are mostly out in the field during the week. From a costing exercise, it was found that 3D printing tends to be more cost effective to print assistive devices than to purchase them especially in low socioeconomic communities.

### AUTHOR CONTRIBUTIONS

**Gérard C. Filies:** Writing original draft; writing—review and editing; conceptualization; investigation; project administration. **Chinno Ingram:** Writing—review and editing; project administration. **Thuli M. Mthembu:** Writing—review and editing; project administration.

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**REFERENCE**

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