



**College of Professional Studies
Northeastern University San Jose**

MPS Analytics

Course: ALY6080

Assignment:

Module 2 Project - Annotated Bibliography (Article 1)

Submitted on:

May 1, 2023

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Revolutionizing Pediatric Care with 3D Printing Technology

The field of healthcare has seen a significant impact from 3D printing recently, particularly in pediatric care. With the aim of improving children's lives, the EPIC Lab in Australia focuses on using 3D technology to develop pediatric medical devices. The author of the article, Dr. Tegan Cheng, is a biomedical engineer and medical scientist, who works with clinicians at the EPIC Lab. The EPIC Lab focuses on two major projects to improve pediatric healthcare. The first is for the growth of orthopedic implants for children, while the second is for the development of 3D-printed ankle-foot orthoses for children. In addition to these two projects, the EPIC Lab also uses 3D printing technology for simulation models, training medical students, and pre-surgical visualization. The lab's multidisciplinary team consists of engineers, scientists, designers, and doctors, who work together to develop innovative ways to address unmet needs in the pediatrics field. According to Dr. Cheng, designing medical equipment for children requires a different approach than designing equipment for adults. Children have unique requirements that cannot be met simply by scaling down adult devices. For example, children's bone growth needs to be taken into account while designing orthopedic implants. Additionally, children's medical devices need to be comfortable, lightweight, and easy to use. These devices either allow for continued growth during implantation or take advantage of the growth in children's bones to gradually correct deformities.

When designing medical devices for children, such as ankle-foot orthoses (AFOs), timely delivery is an important factor to consider. AFOs are custom braces made of thermoplastic that are worn around the foot and ankle. They are prescribed to children and adults with neuromuscular and musculoskeletal disorders to help them walk more easily and perform daily tasks. Since children grow rapidly, the delivery of these assistive devices must be efficient to ensure continuous mobility and function. The EPIC Lab is working on a research program called Printhotics to create 3D printed ankle-foot orthoses. The lab is focusing on improving the workflow to ensure the children receive the optimized devices as quickly as possible. Access to 3D technologies like 3D scanning, computer-aided design, and 3D printing is necessary for lab research projects. These technologies can result in the rapid advancement of new techniques. The most favorite part of Dr. Cheng's role is seeing to be the impact of collaborating with clinicians to create solutions to challenges they face in their daily work. The author's passion for her work is evident in the way that she describes the impact of 3D printing on healthcare, and her enthusiasm is infectious. Dr. Cheng's expertise in the field is also evident, as she describes the technical aspects of the lab's work in a way that is accessible to a general audience. By using 3D technologies, the lab can create innovative medical devices that were not possible before. The team at the EPIC Lab are eager to see what amazing innovations will result from this. By creating efficient and optimized devices, the lab can help ensure that children can continue to move and function well.

Reference:

3Dheals. (2021, December 13). 3D Printing to Improve Healthcare for Children - 3DHEALS:

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