Editorial

The role of a android robot's skill as a teacher in anatomical sciences education: A new concept

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1. Introduction

Anatomy serves a pivotal role in medicine. Shortage of manpower in anatomy can be filled by robots. Robots are not replacing humans but can collaborate as an assistant to human educator. Robots can do repetitive task and human educator can act as a leader, facilitator and final assessment assessor.

2. Role of Robot as a Teaching Assistant

Humanoid robots as a teaching assistant can help the anatomy teacher in many ways. Robots can do the difficult dissection in a methodical way.[1] They can act as a teleconferencing tool to allow farfetched learner to learn anatomy from the comfort of their home and revision in special circumstances like in recent covid pandemic. They can be virtual link between student and teacher. Tracking the students' performance through humanoid robots will be much easier. The artificial Intelligence (AI) of robots will help to complete the curriculum on time.[2] Robots can collect data, analyze it and can give timely feedback of student performance to teacher as well as students and their parents.

3. Comparison of Human Educator and Robert as a Teacher

Humans are unique in a way they have capabilities to show emotions and empathy. Social behavior and understanding the other person's emotions is a quality which no machine can replace. On the other hand humans can be easily bored, tired or distracted; at times they can fall sick and not able to perform their duties. Some teachers feel shy, frustrated and may not be able to interact with students. To overcome this shortcoming, robots may be programmed for personalized learning activities and repetitive tasks. Researcher in robotics should work with this intention where the robot is adjunct to teacher, instead of replacing him in the classrooms.[2]

4. Comparison of humanoid Robert and Computer Assisted Learning

The robots have advantage over the normal computers as they look like humans at a certain level. They can interact like humans. When learners interact with robots they get social stimulus also which is not possible with laptop or

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computers. Robots can interact with equipment, analyze the motion activities and to some extent control the teaching environment. In future with all this capabilities and ever evolving artificial intelligence humanoid robots can be a part of teaching fraternity.[3]

5. Robotic Assistance in the Modern Curriculum

Mentoring plays a central role in a medical student's personal and professional success. Mentors act as trusted guides, elders, and friends to help learners navigate trends toward early specialization, competency-based assessment, and key milestones.[4] However, some structural barriers make the playing field uneven. For medical students, access to mentors may be limited due to guest internship cancellations, in-person rotations, and other in-person interactions. Many of these challenges can persist into residencies and later career stages, where structural inequalities continue to subtly affect opportunities and mentor-mentee pairings. Robots can be programmed to teach anatomy classes, so they could become personalized mentors in the future. Organize your virtual anatomy sessions more efficiently. They are informal, more flexible, and available 24/7. Modern competency-based curricula require a lot of virtual support, and robots can meet this need. Recently Asobo robot is invented. It can adapt its behavior to the emotional state of the learner. In future theses robots can be a part of teaching family but it all depends on cost, curriculum design and acceptance among medical fraternity.[5]

6. Interactive 3D Anatomy Age Robot Assistant

Cadaveric dissection is the corner stone of anatomy and there is no replacement for human cadavers but there are certain parts of the body which need micro dissection and help in creating magnified 3D view.[6] As the teacher demonstrates the dissected cadaveric specimen, virtual assistant can explain clinical and surgical anatomy of the particular specimen.

7. Challenges

The teachers and parents may not be comfortable with the robotic teachings. The students need to be attentive and inquisitive in anatomy class but human robot (which is preprogrammed) may not be able to handle the queries.

The robots are not able to intimidate the human behavior and emotional quotient so it may not be socially acceptable.

There are number of ethical concern with AI and Robots. The teacher can have fear, the robot will replace them. In reality the robot is there to enhance and support the teaching learning programs.[7]

8. Conclusion

A humanoid robot in anatomy teaching is a futuristic concept. It will help in collaborative learning. The robot can help students in active learning. Teachers need to understand that AI is for help and not to replace them. The medical teachers are not aware of the capabilities of robots and general belief is that the robots are not capable to teach students. Humanoid robots can be programmed into algorithms to gather learning resources and create learning objectives that teach the basics of anatomy. Learning tools for humanoid robots help with specific classroom tasks. Humanoid robotic teaching technology bridges the gap between learning and applying skills, information and qualities. Computer tracking of learning management systems can also be performed on humanoid robots. It can be programmed to track student performance. You can provide feedback and collect data on student issues. Hence, medical teachers need to be educated about the AI and robots to make these modalities work effectively in the future.

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