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Survey of dental students' perception of chatbots as learning companions

Artificial intelligence (AI) has advanced rapidly, enabling new technologies like chatbots to emerge as potentially valuable educational tools.[1] Chatbots utilize natural language processing to provide customized, interactive learning experiences that facilitate personalized education.[2] In fields like dentistry, some educators have witnessed chatbots becoming impactful learning companions for students.[3] However, concerns exist regarding overreliance on AI-generated content without critical evaluation and failure to fully develop students' critical thinking skills.[4]

Although advances in AI may help overcome current restrictions on chatbot technology, human guidance, and teacher supervision will still be critical moving forward. As chatbots become more sophisticated, they should not replace, but rather complement, the irreplaceable role of human educators. Rather than avoiding chatbots in education, integrating them could allow students to gain benefits under guidance on effectively interpreting their language patterns.[5] This study aimed to quantify students' requests for chatbot assistance, preferred modes of learning with chatbots, and satisfaction with chatbots' capabilities.

An online survey was conducted with 15 third-year Chung Shan Medical University dental students with chatbot experience. The survey included three sections: 1. Percentage of requests for chatbot assistance across seven common tasks, 2. The number of students who prefer five modes of learning that integrate chatbots, and 3. Satisfaction scores from 1 to 5 for six chatbot perceptions.

The results showed that the most common requests were for help organizing content (88%), translation (75%), presentation design (69%), and reflection (63%) (Table 1A). Most of the students preferred complete in-person teaching (6 students) to blended learning with partial in-person teaching and chatbot support (5 students) (Table 1B). There was low to moderate satisfaction with chatbot versatility (2/3), inspirational qualities (1.9/3), accuracy (1.7/3), intrigue (1.6/3), reliability (1.6/3), and completeness (1.4/3) (Table 1C).

Table 1 Questions were used to investigate chatbot use, students' demands of chatbots, and their perception of chatbots.

A. Percentage of student's requests for chatbots.

Tasks	Percentage (%)
Content organization	88
Translation	75
Presentation design	69
Reflection	63
Answer for past exam	31
Prepare for the national exam	25
Prepare for a regular exam	19

B. The learning modes, together with the chatbot, are preferred by students.

Learning modes	Number of students
Complete in-person teaching	6
Partial in-person teaching with chatbot support	5
No preference	3
Complete in-person teaching with chatbot support	1
Complete chatbot teaching	0

C. Students' satisfaction score (0–3) for the perception of chatbots' use.

Perception of chatbots	Average score
Versatility	2
Inspirational	1.9
Accuracy	1.7
Intrigue	1.6
Reliability	1.6
Completeness	1.4

This study provided initial insight into how students used and perceived chatbots in learning contexts. Chatbots show promise for supplementing in-person education, but

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improvements in their advanced cognitive capabilities will be necessary to enhance students' satisfaction and maximize educational outcomes. Further research should explore in-depth the reasons for students' limited positive perceptions. Developing more human-like chatbots tailored for education could support more engaged and practical learning.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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