NEWSLETTER

# Can Virtual Reality Elicit More Empathy: A Meta-analysis Based on 19 Randomized Controlled Trials

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EMPATHY is an individual's objective and insightful awareness of the feelings and behavior of others. There are mainly two types of empathy: cognitive and affective. Empathy plays a crucial role in improving student academic performance as well as in promoting social interaction of the individual. Virtual reality is generally defined as a medium technology which can provide simulative experiences in a computer-created environment and has the capacity to enhance human empathy by offering immersive learning experiences. This study conducted a meta-analysis to evaluate the effects of virtual reality-assisted instruction on eliciting empathy in students and to discern the influences of various variables on student empathetic behavior. The following two questions were proposed: Is virtual reality-assisted instruction more effective in enhancing student empathy than traditional teaching methods? How are research design, subject matter and process features related to the promotive effects of virtual reality on student empathetic competence?

Literature inclusion criteria were established according to the principles of PICOS, including (1) students as subjects; (2) virtual reality-based instruction as the intervention measure; (3) traditional teaching modes (such as classroom instruction, internship, and screen videos) as control measures; (4) scores from the Empathy Scale serving as outcome indicators (data to be presented as mean values and standard deviations or convertible into mean values and standard deviations); (5) valid and reliable measurement tools; (6) randomized controlled trials as research design. Exclusion criteria included: sample size less than 10; incomplete data or unconvertible data; articles published in languages other than Chinese or English; full text inaccessible. This meta-analysis included 19 studies all conducted by randomized controlled trials, with a sample of 1949 subjects consisting of 1066 in the experimental group and 883 in the control group. All articles were published after 2010, and 11 of them were published after 2020, accounting for 57.89%.

The analytical results demonstrate that virtual reality-assisted education can more effectively enhance students' empathy than traditional teaching techniques; that virtual reality-based instruction has a better effect on

eliciting empathy in students than face-to-face teaching, yet there is no significant difference in teaching outcomes between virtual reality-enabled instruction and 2D/3D video-based teaching; in knowledge learning and public good-related experiences, virtual reality-based education poses significant positive effects on triggering empathy in students, with a stronger effect in the former, whilst it has no prominent empathy-eliciting effect in the teaching of disease diagnoses, compared with traditional teaching methods; 10-20 minutes of virtual reality-assisted instruction is the most effective amount for inducing empathy in students.

*Source: Open Education Research, 2023; 29(1):60-69.*