Black Box competition: Radiological technology education using Black Box phantom

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We developed an educational phantom for students of the Department of Radiological Technology. The phantom consists of three types of cube phantoms (XCUBEs) with different X-ray absorption rates (yellow, blue, and orange) and a black box (BBOX) that can hold 27 XCUBEs (3x3x3=27). The student's task is to analyze multiple X-ray images to estimate the color of the cube phantoms at 27 locations in the BBOX. In November 2021, a "BBOX Competition" was held by connecting two universities via the Internet. Teams of three to four people and individual competitions were held, with participants competing on the accuracy of their analysis and the time required for analysis. The questionnaire results confirmed that the BBOX competition is a useful learning experience and that it is particularly effective in developing communication and team skills in team competitions. We would like to grow the Black Box Competition into a nationwide competition. In addition, we would like to try to hold Black Box Competitions with universities overseas. We believe that exchanges through the Black Box Competition will lead to not only active learning in the field of radiological technology, but also to a wide range of cultural exchanges.