The effect of worked out modeling and nursing simulation

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This study provides a research framework that incorporates cognitive load theory (CLT) into nursing simulation design and implementation, as well as providing a pilot tool to measure cognitive load specific to nursing simulation. There is limited research related to cognitive load and nursing simulation. Due to this fact, there is also limited information as to the amount and types of cognitive load nursing students experience during simulation exercises or how this may affect learning and knowledge acquisition. The purpose of this study was to answer the following research questions. Is knowledge acquisition affected using worked out modeling pre-simulation? Is self-reported cognitive load affected using worked out modeling? The wider purpose was to investigate components cognitive load related to nursing simulation so that the student is experiencing maximum learning that can be translated into their future nursing practice. A quasi-experimental quantitative design was used with a convenience sample of senior baccalaureate nursing students who participated in simulation as part of their coursework. Participating students were given the same amount of time for the preparatory pre-simulation activity and the debriefing model of noticing, interpreting, responding, and reflecting was used by all simulation debriefers (Cato, Lasater, & Peeples, 2009). The treatment group received a worked-out modeling intervention, designed upon the CLT instructional intervention of the worked-out example. The control group received the usual simulation intervention of a preparatory question and answer time. Each group was given a pre- and post-simulation knowledge survey related to simulation content and a cognitive load survey (adapted from Leppink, Paas, Van der Vleuten, Van Gog, & Van Merrienboer, 2013) post simulation to measure whether the worked-out modeling intervention had any effect on cognitive load experienced and knowledge acquired from the simulation experience. Results suggested that students receiving the worked-out modeling intervention did have higher knowledge attainment scores related to fall management. Although not significant, there was suggestion that the treatment group experienced more intrinsic and germane and less extraneous load than the control group. No significant differences were found in the level of cognitive load experienced, although additional measures identified that the use of a pre-simulation reading activity does increase germane load. While the overall reliability of the cognitive load tool was good the area of extraneous load had poor reliability in the context of nursing simulation and worked out modeling. Further research is warranted concerning the use of worked out modeling related to focused interventions and objectives versus complex multi-faceted objectives and interventions and one patient versus multiple patient simulations. In addition, continued research concerning the cognitive load survey tool and its reliability across a variety of nursing schools and student levels is recommended.