Virtual manipulatives as cognitive tools, dynamic and interactive, Web-based representations permit users to engage in mathematical meaning making. This research examined teacher candidates' beliefs about and perceptions of the mathematical fidelity of a certain set of freely available virtual manipulatives related to problem solving. Preliminary findings suggest that an assumption that the degree to which the mathematical object is faithful to the underlying mathematical properties of that object in the virtual environment (mathematical/cognitive/pedagogical fidelity) has been granted by teacher candidates to virtual manipulatives designers automatically, without checking. Further qualitative probing was carried through to better understand the nature of such assumptions. (Received September 18, 2013)