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Preservice teachers articulate the need for more teaching experiences for developing their practices, however, extending beyond existing school arrangements may present difficulties. Thus, it is important to understand preservice teachers’ development of pedagogical knowledge practices when in the university setting. This mixed-method study investigated 48 second-year preservice teachers’ development of pedagogical knowledge practices as a result of co-teaching primary science to peers. Data were collected through a survey, video-recorded lessons, extended written responses and researcher observations. The study showed how these preservice teachers demonstrated 9 of 11 pedagogical knowledge practices within the co-teaching arrangement. However, research is needed to determine the level of development on each pedagogical knowledge practice and how these practices can be transferred into authentic primary classroom settings.