Reasoning informally about statistical inference is being able to make inferences about data without using any formal statistical method or procedure. Probabilistic inference is informal statistical inference in a probabilistic context. This study investigated six middle school students as they were engaged solving several tasks in a 12-day instructional sequence in probability using the software Probability Explorer. In order to describe how students’ informal statistical inference changes while being exposed to instruction we developed the Probabilistic Inference Framework, which is based on the SOLO Taxonomy. We will share some of the tasks used during the instructional program as well as some of the findings from our research.