The paper presents an alternative real time adaptive learning in the presence of signal-to-noise ratio uncertainty. The main innovation of this algorithm is that it uses a gain which is determined within the model: it continuously depends on the extent of miscalculation of parameters embedded in the forecast error. We show that in the presence of signal-to-noise ratio miscalculation, the usage of the proposed learning algorithm is a significant improvement on the Kalman Filter learning algorithm. In a full information case, the Kalman Filter learning algorithm is still the optimal tool.