In the density estimation context, *Bayesian Information Criterion (BIC)* may be applied for assessing the number of learning style clusters It as it is a method for scoring and selecting a model appropriate for models fit under the maximum likelihood estimation framework. In the cluster analysis context, since BIC does not take into account the clustering purpose for assessing , BIC has a tendency to overestimate regardless of the separation of the clusters. To overcome this limitation, *Integrated completed likelihood (ICL)* criterion which considers integrated likelihood of complete data is recommended. Here is latent variable denotifying cluster label for a feature. Criterion ICL is the criterion BIC penalized by the estimated mean entropy. Because of this additional entropy term, ICL favors values giving rise to partitioning the data with the greatest evidence. ICL appears to provide a stable and reliable estimate of for real data sets and also for simulated data sets from mixtures when the components are not too much overlapping. But ICL, which is not aiming to discover the true number of mixture components, can underestimate the number of components for simulated data arising from mixture with poorly separated components.