A modified double ranked-set sampling technique is introduced and its efficiency is investigated. The best linear unbiased estimators of the mean, location and scale parameters and generalized variance of the normal, uniform, exponential and Weibull, distributions are obtained by using both the double ranked-set sampling and modified double ranked-set sampling procedures. The efficiencies of these estimators of the mean, location and scale parameters relative to the best linear unbiased estimators using ranked-set sampling for the given distributions are obtained and tabulated using both double ranked-set sampling and modified double ranked-set sampling. Regardless of the distribution or the sample size being used, results show that the efficiency of the best linear unbiased estimators significantly improved when using the modified double ranked-set sampling rather than double ranked-set sampling or ranked-set sampling techniques in estimating the mean, location and scale parameters. (Received September 14, 2016)