Suppose you have already administered $Y_1, Y_2, \dots, Y_{j-1}$ to a student. You want to select the jth item to minimize the expected Shannon entropy $ESH\left(\pi_{\{1,\dots,j-1,Y_j\}}\right)$. The expected Shannon entropy for dichotomous items is calculated by the following steps:

$\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right) = \frac{P\left(Y_1, Y_2, \dots, Y_{j-1}\middle|\theta\right)\pi_0(\theta)}{\int\left(Y_1, Y_2, \dots, Y_{j-1}\middle|\theta\right)\pi_0(\theta)d\theta}$, where $\pi_0(\theta)$ is the prior of theta distribution you desire.

$$\pi_{\{1,\dots,j-1,Y_j=1\}}(\theta) = \frac{P\left(Y_j = 1\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)}{\int P\left(Y_j = 1\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)d\theta}$$

$$P\left(Y_j = 1\middle|Y_1, Y_2, \dots, Y_{j-1}\right) = \int P\left(Y_j = 1\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)d\theta$$

$$\pi_{\{1,\dots,j-1,Y_j=0\}}(\theta) = \frac{P\left(Y_j = 0\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)}{\int P\left(Y_j = 0\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)d\theta}$$

$$P\left(Y_j = 0\middle|Y_1, Y_2, \dots, Y_{j-1}\right) = \int P\left(Y_j = 0\middle|\theta\right)\pi_n\left(\theta|Y_1, Y_2, \dots, Y_{j-1}\right)d\theta$$

$$\begin{aligned} &ESH\left(\pi_{\{1,\dots,j-1,Y_j\}}\right) \\ &\quad = \int -\log\left(\pi_{\{1,\dots,j-1,Y_j=1\}}(\theta)\right) * \pi_{\{1,\dots,j-1,Y_j=1\}}(\theta) * P\left(Y_j = 1\middle|Y_1, Y_2, \dots, Y_{j-1}\right) d\theta \\ &\quad + \int -\log\left(\pi_{\{1,\dots,j-1,Y_j=0\}}(\theta)\right) * \pi_{\{1,\dots,j-1,Y_j=0\}}(\theta) * P\left(Y_j = 0\middle|Y_1, Y_2, \dots, Y_{j-1}\right) d\theta \end{aligned}$$