X — a finite set

A "kernel" or a "reproducing kernel" on X is a map $K: X \times X \longrightarrow \mathbb{R}_{\geq 0}$, s.t.

$$K(x, y) = K(y, x)$$

& K is a "positive definite" matrix.

Define

$$d(x, y)^2 = \| K(x, \cdot) - K(y, \cdot) \|^2_{L^2(X, \text{ counting measure})}$$

.... What on Earth is he talking about?