

# **Evaluating the Effectiveness of a Digital Knowledge Pack in improving Agricultural Experiential Learning: The Case Study of Egerton University's Students, Kenya**

## **ABSTRACT**

One of the roles of higher education is to produce competent professionals with high employability skills. Learning by doing commonly known as Experiential Learning (EL), is an approach to learning that helps students acquire competences needed in the job markets. Field attachment including Farm Attachment Programme (FAP) of Egerton University (EU) is known to provide opportunities for EL. However, the effectiveness of this approach to learning is dependent on possession of prior knowledge and EL abilities including ability to; willingly get actively involved in the learning experiences, reflect, analyze, solve problems, make decisions in addition making continuity arrangements for innovations/projects initiated. This study aimed at evaluating the effectiveness of a designed Digital Knowledge Pack (DKP) to improve the levels of ELAs among the students of EU. The DKP design attributes under evaluation were the DKP; weekly structure, implementation enablement, students' portfolio and resources. The specific objectives of the study were to(i) characterize EU students on FAP (ii) determine the levels obtained on ELAs with each DKP innovation design attribute (iii) determine the effects obtained on ELAs with each DKP innovation design attribute iv) evaluate the extent to which the use of a DKP improved ELA levels among the students. The study employed Participatory Action Research Design (PAR) by first allowing a sample of 30 students to proceed on FAP for three weeks and then introducing a designed DKP toolkit in the fourth week of attachment. The levels of ELAs among students were determined before and after the introduction of the DKP using a rating continuum scale of 1-5. The results showed that the DKP weekly structure had a significant ( $F(10,29) = 8.49, P = .001$ ) effect on the students' ELAs and accounted for 72% of the variation in ELAs. The effect of the DKP student's portfolio on ELAs was also significant ( $F(9,29) = 6.95, P = .001$ ) at 95% confidence level and accounted for 74% of the variation in ELA levels. DKP implementation enablement and DKP resource attribute had significant [ $F(3,26) = 87.410, P < .0001$  and ( $F(16,29) = 2.86, P = .03$ ) respectively], effects. The size effects of the two variables were 64.9% and 50.6% on ELAs respectively. Further analysis revealed that multicollinearity existed in the DKP design attribute variables. This was resolved by conducting Principal Component Analysis (PCA) of the DKP design variables. A scree plot showed a one component solution that explained 91.18% of variance in the ELA index regression model. The component Eigenvalue was 3.647 and therefore the four

DKP attributes could be explained by one component variable referred to in this study as DKP innovation Design (DID) attribute. The results showed that using a DKP significantly improved the ELA levels from  $M=2.63$ ,  $SD=0.52$  to  $M=4.07$ ,  $SD=0.13$ . The 95% confidence interval of the mean was 1.356 [1.005, 1.706]. In conclusion the study showed that the use of a DKP innovation toolkit improved experiential learning abilities among Egerton University students. The higher levels of learning abilities allowed students to gain more competences (knowledge, skills and attitudes) from their farm experiences thus improving the students' employability skills.