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Energy assessment in tertiary institution laboratory for a sustained learning and teaching experience during COVID-19 restrictions

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Intense domestic resources utilisation might have been heavy weighing toward an increased electricity and water consumptions during the COVID-19 related lockdowns and people movement restrictions, while the routine energy consumption by technical instrumentations, and electronic and electrical appliance at institutions of higher learning would have been slightly reduced. Closely monitored access to laboratories by student groups and academic and technical staff compounded with a reduced frequency might be the root causes. Energy and resources utilisation are also tools used in the performance assessment of a tertiary programme or an academic department sustainability. The effective and efficient laboratory usages during the lockdowns imposed online learning and teaching activities have been assessed for the period between March 2020 to April 2021. Five laboratories (mineral processing, analytical techniques laboratory, heat treatment laboratory, wet chemistry laboratory, and coal processing laboratory) of a metallurgical engineering department at a local university were used. Bill of materials, water and related energy consumed were benchmarked with respect to the average consumption within the country while laboratory access by students and student to staff ratio during the above-mentioned period served as supporting additional component into the sustainability criteria of the studied academic department. The paper discusses the modelling of the sustainability of the studied academic department using the Grey rationale analysis optimisation methodology. Multiple alternatives as sustainability pointers are discussed and the most desirable outcomes elucidated.

Apply to be considered for a student ; award (Yes / No)?

No

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