A Serious Game for Teaching and Learning in the Built Environment – Eco Material Trumps

Dr John Lester Clarke

University College of Estate Management

The Eco Material Trumps card game contains data on six key sustainability features for 44 common construction materials, enabling participants to compare and contrast their sustainability credentials. The aim is to inform and stimulate debate on how, in practice, decision-makers need to balance the differing criteria that are used to establish the environmental impact of construction materials. Research has shown that there is a disparate body of existing knowledge related to the subject matter which until now has not been collated into a single resource.

The use of construction materials has a significant impact on the natural environment in terms of energy use, the burning of fossil fuels, CO₂ emissions, the depletion of finite resources, air, water and ground pollution, biodiversity and the production of waste. During the design and construction phase CO₂ emissions can be reduced by as much as 30% through the careful selection of materials.
The ability to absorb technical information can be daunting for built environment students and professionals alike and the value of games, used to support training and learning, has been widely recognised for many years (Coleman, 1971). Lujan and Di Carlo (2005) argue that “the packed curriculum leaves little time for students to acquire a deep understanding of the subject or to develop life-long skills such as critical thinking, problem solving, and communication.”

The workshop is highly practical and experiential and requires participants to interact with a non-traditional form of teaching and learning through playing the Eco Material Trumps game and then reflecting upon its efficacy. Delegates are introduced to gamification theory and practice, behavioural change, climate change, lifecycle considerations and theoretical background to the development of the resource Eco Material Trumps.

Feedback from built environment students, academics and professionals has elicited positive comments about the workshop as a ‘fun’, ‘informative’, ‘engaging’ and ‘interesting’ experience.

• Author(s) Biography (200 words each):

I have worked as a public and private sector Building Surveyor and on several low environmental impact buildings in the UK and overseas, utilising sustainable materials and have taught a broad range of built environment topics in schools, colleges and universities to a wide variety of learners. I have also worked as a researcher for a number of academic institutions. My teaching and research interests are in developing and promoting economic, social and environmental sustainability related to the built environment.

I have an Honours Degree in Building Surveying, a Masters’ Degree in Renewable Energy & Architecture and a Postgraduate Certificate in Education. I completed my PhD entitled ‘Sustainable Buildings: Sustainable Behaviour?’ in 2013. This focused on how sustainable buildings, throughout their design, construction, operation and use, impact on sustainable construction practices and the behaviours of key stakeholders.

Most recently, I have worked as a postdoctoral researcher developing retrofit and low carbon technology solutions to mitigate climate change and as a home energy consultant for a major housing association, identifying energy efficiency opportunities to alleviate fuel poverty. At UCEM I tutor, develop module content and research and develop ESD in the built environment.