Research & Reviews: Journal of Educational Studies

Developing a Competence Profile for Industrial Logistics Engineering Education in a Systematic Way

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Perspective

Received: 06-Apr-2022, Manuscript No. JES- 61534; **Editor assigned:** 08-Apr-2022, PreQC No. JES-61534(PQ); **Reviewed:** 22-Apr-2022, QC No. JES-61534; **Revised:** 29-Apr-2022, Manuscript No. JES-61534(R); **Published:** 03-May-2022, DOI:10.4172/j.educ.stud.8.4.005

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ABOUT THE STUDY

By referring to principles like digitization, interconnection, and autonomy, the technologies and technological concepts of Industry 4.0 offer a plethora of chances to improve firm internal and external processes. Despite the fact that the human factor is frequently regarded as the most important component of an Industry 4.0 strategy, systematic approaches to the holistic development of employees in modern production and logistics systems are frequently absent from scholarly research and practise. The systematic construction of skill profiles for industrial engineers based on present and future needs of industry and society is one feasible approach to methodical integration. As a result, this study examines the current state of educational approaches for industrial engineering education, with a focus on lifelong learning. In addition, the authors review the current literature on systematic competence development and propose an exemplary competency profile for industrial engineers in the domains of inbound, production, and outgoing logistics as a foundation for future industrial engineering education initiatives.

Multi-channel data, such as ultrasonic location data, three-axis acceleration, and attitude quaternion, is introduced in the data acquisition stage to better define the digital properties of comparative schooling. This study minimises the restrictions on the experimenter in the process of digitalization of comparative education, such as trajectory ratio, space station position and orientation, and so on, while developing the digitalization of comparative education. As a result, designing features with adequate discrimination is typically problematic when utilising traditional machine learning approaches (such as neural network models, etc.) for recognition. This article attempted to recognise comparative schooling data using traditional methods based on IMU and neural network

models, but the results were unsatisfactory. This method prioritises each comparative education digitization attribute's information, selects the corresponding data channel and identification method based on the currently discriminated comparative education digitization attribute, and finally determines the comparative education digitization label. The trajectory form is the basic attribute of all comparative education digitalisation, according to the definition. As a result, it first judges and compares the education digital sample's trajectory shape, and then gradually completes the recognition based on movement direction, comparative education digital priority, and spatial position, before introducing the specific recognition method of the information design of each attribute.

There are four commonly utilised trajectory coding methods in research at the moment. The first one works directly with the trajectory's raw data. This approach can capture the general characteristics of the trajectory shape, but it is susceptible to local noise and has limited robustness. The second option is to encode using the trajectory boundary function. The directional chain coding is a common solution. The third option is to encapsulate the original trajectory data with transform functions. Fourier transform, wavelet transform, and other transforms are commonly employed. The fourth option is to turn into descriptor sequence using irrelevant descriptor trajectory information. Morphological descriptors, differential descriptors, and integral descriptors are examples of common descriptors. In this context, a competency profile serves as the beginning point for professionalization initiatives in engineering education, serving as a form of target specification for the desired learning outcomes. This can only be achieved by involving a diverse group of stakeholders at both the micro and macroeconomic levels, and it must, of course, be continually improved. Because, to the authors' knowledge, subject-specific competency profiles in the field of engineering education are still underdeveloped, this paper has systematically designed a competency profile for industrial logistics engineering education by discussing the necessary professional and transversal competencies in the subfields of inbound, production, and outbound logistics based on current literature insights. This concept for a competence profile serves as a beginning point for professionalising engineering education in the subject of industrial logistics, but it needs to be modified by taking into account current needs from the viewpoints of science, business, and society.