APPLICATION-ORIENTED TECHNOLOGICAL SKILLS FOR TAIWAN'S SOLID-STATE LIGHTING INDUSTRY

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ABSTRACT

Solid-state lighting is one of Taiwan's major green energy fields. Currently, the country needs more manpower to support industrial development. Engineering programs at technical colleges and universities of technology mainly focus on cultivating graduates' professional skills, which should match the industry's needs; this should be reflected in these programs' curricula. Thus far, a big gap remains between graduates' professional capacities and the industry's requirements. Hence, it is imperative to improve program curricula and academic instruction to promote students' expert abilities. Based on the problem outlined above, this study investigated technology-oriented skills in the solid-state lighting industry to develop new, industry-oriented curricula and enhance academic content. The authors used document analysis, field interviews, meetings with experts, and a questionnaire. The authors employed descriptive statistics such as the frequency, percentage, mean, standard deviation, Kendall's tau rank correlation, and Importance-Performance Analysis (IPA) to collect the data. The authors found that (1) the application-oriented technological skills required for solid-state lighting comprise six categories, and are subdivided into 52 technology-oriented abilities. (2) There are three categories of the importance of solid-state lighting and usage levels in order to sort the data of the rank correlation test, which showed a significant level of $p < .01$ in six classifications. (3) In terms of verifying the basic information of the 52 required skills, they are below the $p < .05$ level of significance. (4) In terms of the IPA, one competency fell under the area of "urgent investment," 25 related to "maintaining skills," 25 to "deferring investment," and 1 for "over-emphasis." The results can provide an outline of expert abilities in developing or fixing industry-oriented curricula at technical colleges and universities of technology.

Keywords: Importance-performance analysis; professional curriculum; solid-state lighting industry; technological competency.