Homegrown Engineering: The Development of Regional-Targeted Engineering Programs That Reinforce Existing Programs in the State

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Engineering creates wealth and is the engine of economic development. However, Southwest Florida prospective students and businesses have not, yet, had a chance to enjoy respective educational opportunities. Part of the problem is the lack of understanding of what engineers do for society. As a consequence, many potential engineering students decide on other careers, or alternatively pursue engineering studies elsewhere, leaving the region behind.

An approach, which we advocate and call *Homegrown Engineering* , focuses on the regional needs. Rather than replicating the traditional ways of doing and teaching engineering, it proposes targeted engineering programs that satisfy the real economic-development needs of the region. We are referring to non-traditional programs, in the context of sustainable growth and development, such as an innovative environmental engineering curriculum (with a civil engineering technology component), or a new engineering management curriculum with a construction or real estate development emphasis. Furthermore, there is a need for programs such as software engineering with a quality assurance and security emphasis, biotechnology engineering with an agricultural focus, and small-parts manufacturing technology, that address future needs.

There are examples of how homegrown (regional, customized) engineering can help local business react quickly to global competitive challenges. There are numerous benefits of having engineering researchers available to the regional agricultural, construction and real estate, health, hospitality, manufacturing and information technology industries. But presently, Southwest Florida does not have an Engineering School or the engineering faculty to make such an impact. According to a recent study commissioned by the Florida Gulf Coast University, *Southwest Florida is the largest metropolitan region in the United States without an accredited engineering program.* This paper presents new, creative ways of doing engineering - including R&D - and learning engineering by doing.