

E-LEARNING IN THE GREENFIELD COALITION

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Abstract *The Greenfield Coalition at Focus:HOPE is a coalition of five universities, seven manufacturing companies, the Society of Manufacturing Engineers, and Focus:HOPE. (a civil rights organization dedicated to intelligent and practical action to overcome racism, poverty and injustice in Detroit and its suburbs). Greenfield was formed to create a revolutionary educational experience for the Candidates at the Focus:HOPE Center for Advanced Technologies leading to bachelor degrees in engineering and engineering technology. The Coalition has developed an innovative strategy to support classroom learning using e-learning tools. Greenfield's strategy, technology, and implementation are discussed.*

Index Terms— e-learning, computer-based instruction, Engineering Education Coalitions.

THE GREENFIELD COALITION

Greenfield Coalition at Focus:HOPE is a coalition of five universities (Lawrence Technological University, Lehigh, University of Detroit Mercy, University of Michigan, Wayne State University), six manufacturing companies (Cincinnati Machine, DaimlerChrysler, Detroit Diesel, Electronic Data Systems, Ford Motor Company, General Motors Corporation), the Society of Manufacturing Engineers, and Focus:HOPE. It was formed to create a revolutionary educational experience for the Candidates at Focus:HOPE leading to advanced university degrees in engineering and engineering technology. The Coalition is funded by the National Science Foundation (NSF) to develop a new educational experience not encumbered by legacy systems which is founded on the integration of academic learning and manufacturing skills in the workplace, and leverages technology to enhance and accelerate progress toward the degree.

FRAMEWORK FOR E-LEARNING

Greenfield's strategy for e-learning is built on a set of beliefs, which frame a new culture in engineering education.

- Learning is a shared responsibility between learner and teacher.
- Faculty play a key role guiding students in the learning process.
- Learning is made real if it is integrated with real-world experience.

- Learners must prepare to engage in classroom experiences.
- Learning is a social process, which requires interaction with mentors and peers.
- By actively participating in their learning, students achieve deeper understanding and enhanced skills.
- Technology is not a silver bullet, which by itself promotes learning, but if used effectively, it can provide new capabilities to support learning.

Each Greenfield Course is organized into modules. A module is a major concept-centered topic—like a chapter in a textbook. For example a module in Engineering Economics might focus on Depreciation Accounting. Each Module is organized into Sessions. For example our module on Depreciating Accounting might include one session on: Depreciation Methodologies and a second session on Income Tax Implications in Depreciation Accounting. Sessions are not synchronized to a class period. A session might occupy less than one class period, or it could overlap a couple of classroom periods.

So far, our decomposition of the course has been topically based. However, that pattern is broken when we examine the structure of a session. Here our session object is composed from a set of Activities. Examples of Activities include: class discussions, e-learning exercises, group problem-solving experiences, or a mini-lecture. Greenfield's preference is to emphasize the word ACTIVE in an activity.

Courses in the Greenfield Learning System are not stand-alone objects. Collections of courses are grouped into Knowledge Areas: Examples of Knowledge Areas include: Engineering Foundations, Communications, Liberal Studies, Manufacturing Processes, and Manufacturing Systems. A Knowledge Area acts as an integration layer in the curriculum. Like Greenfield Courses, Knowledge Areas have objectives, which integrate objectives across conceptually-related courses.

Finally, the curriculum is the collection of its Knowledge Areas. The Knowledge Area Objectives are the decomposition of the high level Curriculum goals, which Greenfield call competencies.

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