

## Dynamics of pedagogical innovations: roots and developments. Cases of study in Physics and Mathematic

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In general, education, R&D and working life cooperation should form a solid and interactive whole that is able to respond to dynamic and ever-changing expectations. Embedding pedagogical knowledge in innovation activities may offer a long-desired theoretical basis for developing knowledge-based competitiveness in the cooperation between working life and education. Here, the cornerstones of innovation pedagogy are interdisciplinary operations, R&D, curricula and internationalisation in addition to entrepreneurship and service activities.

The key elements here are innovative learning and teaching methods, which can be interlinked with the surrounding working life and innovations by physical products, services and processes. Acting together in an interrelated, interactive and innovative environment, these elements operate within the circle of continuous improvement. In such settings, learning and teaching methods are developed more expediently, working life operations and competitiveness are enhanced and new innovations are created.

The overall aim of innovation pedagogy is to contribute to the development of student's innovation competencies.

Innovation competencies refer to knowledge, skills and attitudes needed for the innovation activities to be successful.

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