

DEPARTEMENT
ONDERWIJS & VORMING



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STEM

SCIENCE TECHNOLOGY ENGINEERING MATHS

Brussels – February 11, 2019

**Comité femmes et sciences”
Department of Education and
Training Flanders / Belgium**

STEM in Flanders 2011 to date



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STEM in Flanders

1. Background to the Flemish STEM ACTION PLAN 2012-2020
2. Key strategic partners
3. GIRLS and STEM
4. The STEM-Quality Framework for Schools - 2015
5. Strategic focus 2020-2030

6. Questions?



Background

- STEM in Flanders/Belgium: (2012): shortages STEM profiles in labour market + high levels of youth unemployment
- Today: overload many STEM-job offers
- Initiative by Flemish Parliament (2010 & 2011)
- **STEM Interministerial Plan of Action** / Flemish-Government 2012-2020:
 - **Ambitious and long term**
 - **Measurable**
 - **Impact at all levels of education**
 - **Combining the actors and their actions**



Organisational set-up

- ▶ **Advisory Board (the “STEM Platform”)** - Academic world, Journalism, Industry, ... **INDEPENDENT advice**
- ▶ **Decision taking: Interdepartmental** via a Steering & Implementing Committee
- ▶ Government Departments involved:
 - Education and Training
 - Work and Social Economy
 - Economic Affairs, Science and Innovation
 - + their 3 Agencies
- ▶ **7 years in operation & 7 Strategic Advices to Government**
- ▶ **Most advices transferred into policies**



Budgets and impact

- ▶ no new, extra budgets, but monthly coordination of strategies and activities (strategic planning, quality control, linking of activities)
- ▶ Initially: a multitude of activities:
 - ▶ more than 100 STEM STEM-Academies in the leisure time,
 - ▶ 40 STEM Start Up Schools & STEM Schools of Excellence,
 - ▶ hundreds of activities by the 3 Departments targetting a higher appreciation of STEM,
 - ▶ STEM Coaches for the schools,
 - ▶ specific actions for target groups, ...



As from 2015: a systemic approach

- ▶ Projects continue
 - ▶ But Government focusses on systemic changes
-
- Director appointed: VLAIO
 - STEM-Didactics for education
 - STEM-Quality Framework
 - STEM-Academies: strategic financing
 - New attainment goals (1/9/2019) contain STEM
 - Renewed matrix for secondary education: STEM
 - STEM Learning Networks for primary and secondary education



Impact

- ❑ Annual STEM Monitor (recent June 2018): increase + focal issues
- ❑ Some tertiary training institutions see an increase of 20 % in STEM-related options
- ❑ Secondary schools re-think their curriculum: 5 “optional hours” in grade 1 are often integrated into an interdisciplinary STEM-module (“STEM-schools”)
- ❑ High level of support in field of education and training



Impact 2

- ▶ a broad re-visiting of educational strategies
- ▶ interdisciplinary planning and training
- ▶ ownership by schools and teachers of the curriculum

- ▶ But also:

- ▶ PR, recruitment strategies, blurring of vocational options???



BUT ALSO: warning signs....

STEM-Monitor indicates:

- Generic education: 53 % STEM (growing fast)
- Idem ditto: higher education (bachelor and master level)
- VET: Technical education: slow growth, some years: stabilisation
- Vocational training: stabilisation + decrease



GIRLS

- ▶ 2 KEY INDICATORS out of 5 (STEM MONITOR) linked to girls:
OK
- ▶ BUT: girls LOW in Technical Education
- ▶ VERY LOW in Vocational Training

- ▶ Linked to curriculum?
- ▶ Opportunities for higher focus on societal challenges and dynamics?





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STEM QUALITY FRAMEWORK – 2015

- No international definition STEM available
- Equality of schools: need for referral point
- STEM QUALITY FRAMEWORK:
 - For all schools and for all levels
 - Combination of 10 Dimensions of Good STEM
 - Ownership for implementation lies with schools and teachers



10 Dimensions of Good STEM: 1-5

1. Integration of the separate components of the acronym respecting the uniqueness of each component
2. Problem solving learning strategies
3. Skillfull and creative research and creation
4. Thinking, reasoning, modelling and learning how to abstract
5. Strategic use and development of technology



Cont. 6 -10

6. Gaining insight into the societal relevance of STEM
7. Acquisition and interpretation of information and communication about STEM
8. Team work
9. Acquisition of 21st Century skills
10. Innovation

2 STEM LEARNING NETWORKS

- ▶ Background: development of STEM didactics for primary education: constant feedback between research and implementation
- ▶ More than 60 primary schools meet every months (2 years) & constitute a Community of Practice
- ▶ More than 200 secondary schools
- ▶ Recognition of grass roots initiatives + in-service training + quality control instrument



STEM-didactics

- ▶ Primary education: STEM voor de Basis (completed + in constant development)
- ▶ Secondary education: 2 and 3rd grade: STEM@School: completed (idem ditto)
- ▶ In development:
 - 1st grade
 - STEM in Technical Training
 - STEM in Vocational Training



INNOVET: Innovation in Technical and Vocational Training (2018–2021)

- ▶ On the basis of the findings of the STEM-Monitor
- ▶ Societal challenges
- ▶ Research on the teachers in VET: rapid changes
- ▶ Need for innovation
- ▶ 10 intensive programmes (VET-schools + industry + external partners) preparing learning modules on the 7 transition areas (energy, mobility, the new construction systems, new health systems,...)
- ▶ To be disbursed over the 500 VET-schools in Flanders
- ▶ Due to be a sustainable project





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STRATEGY 2020–2030

- New Action Plan for the new Government
- Deepening the multitude of actions informed by the Monitor Findings
- Monitoring will be integrated with Work, Social Economy and Economics, Science and Innovation
- KEY FOCUS on Societal Impact of STEM (society in transition) + girls/target groups
- **FOCUS will be on STEM for All (education will continue)**





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Questions?

STEM Flanders

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