

***Recent developments in  
standardized testing for final  
exams at Austrian secondary  
vocational schools in  
mathematics***

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## *The Austrian Secondary Vocational Education System (BHS)*

Schools and Colleges of Engineering Arts and Crafts

(HTL)

Schools and Colleges of Occupations in the Business Sector

(HAK)

Colleges of Agriculture & Forestry

(HLFS)

Schools and Colleges of Management and Service Industries

(HUM)

Nursery Teacher Training Colleges

(BA)

## *Reasons for establishing a standardized Matura*

- Comparability & Transparency
- Fairness and Objectiveness in Rating
- Reliable Information about sustainable competencies
- Fit for Europe: → EQF



## *The 3 fundamentals of the new Matura*

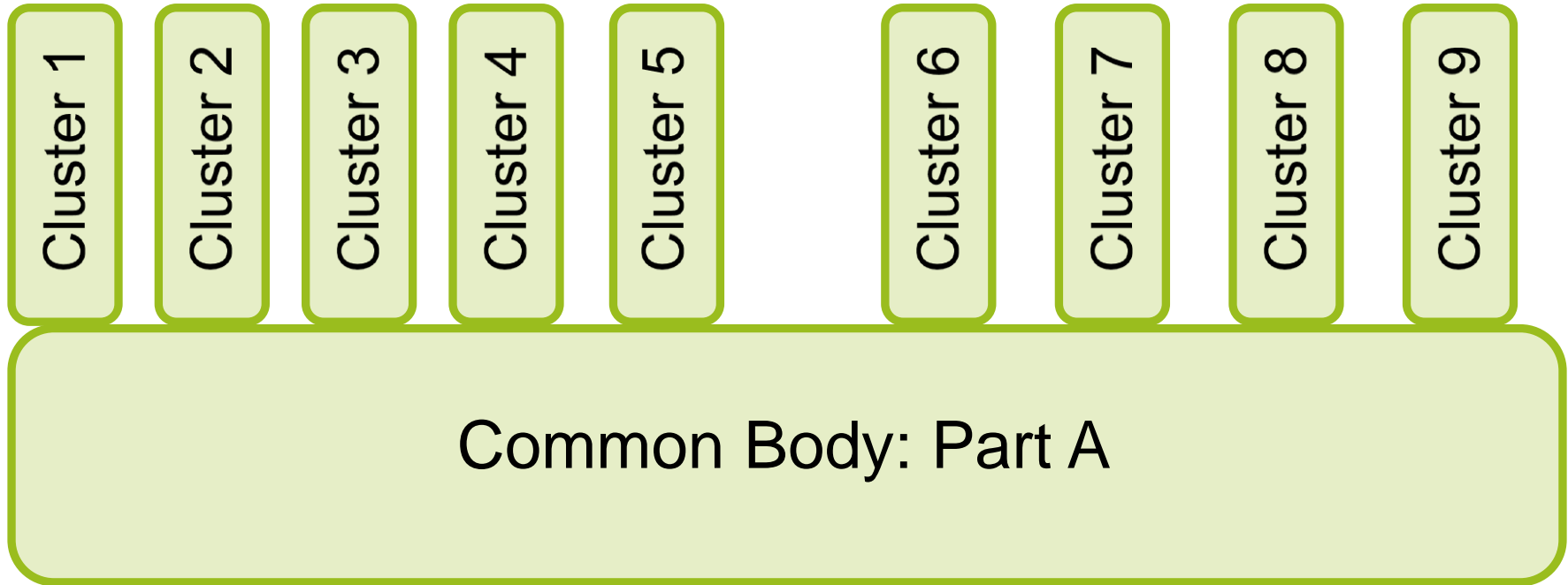
diploma  
thesis

written  
exams \*

oral  
exams

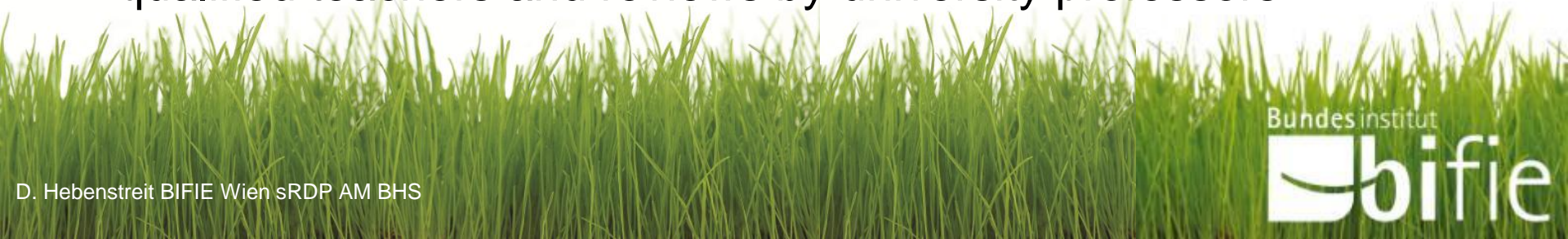
\* Negative grades can be compensated by a standardized oral exam

## *The model*

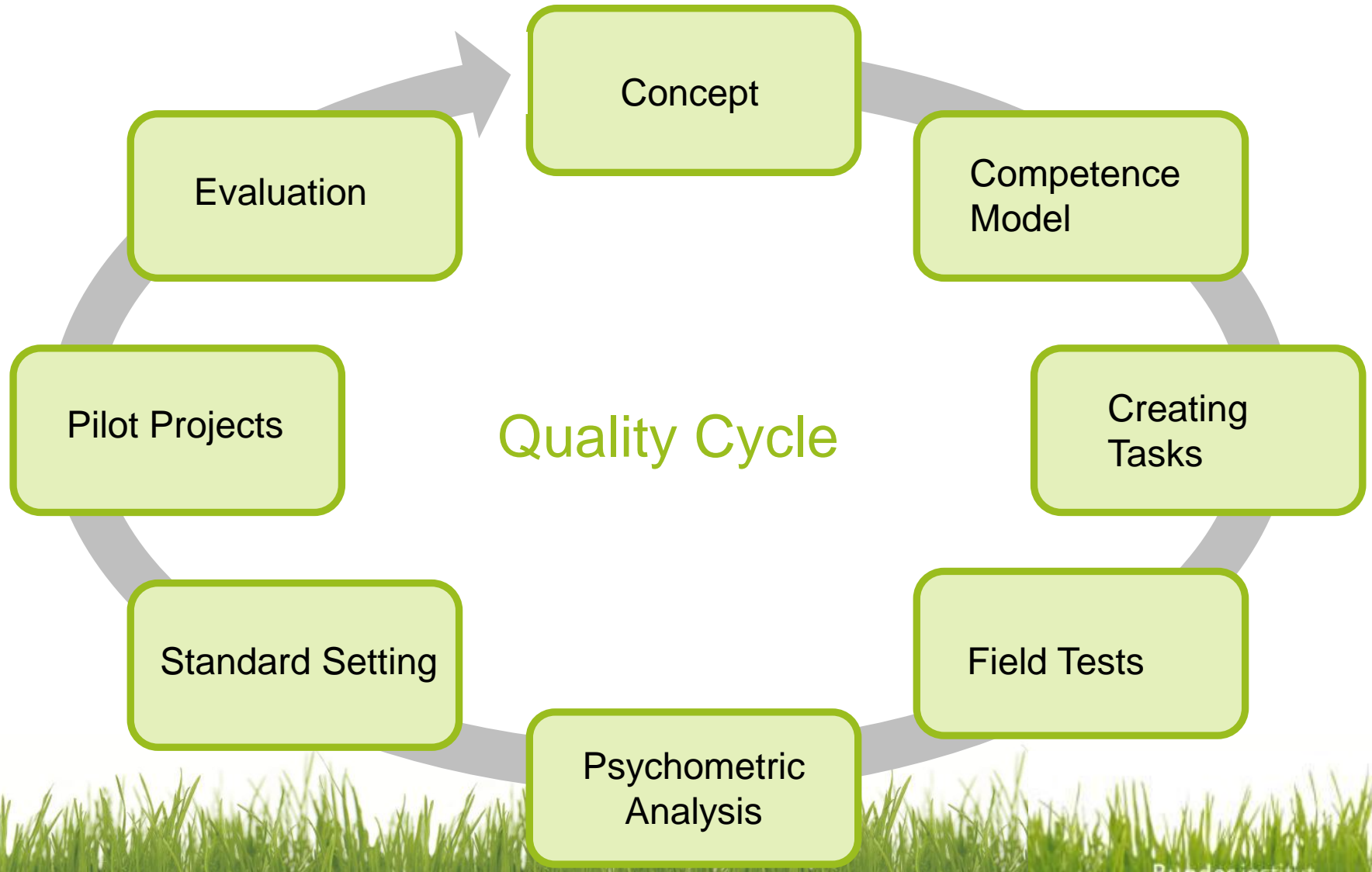


## *Concept of the standardized examination*

- Basis: Curriculum, Standards Model M-13
- Emphasis on competences and skills
- Scientific monitoring:
  - ✓ Validity
  - ✓ Reliability
  - ✓ Objectivity
- Development of tasks by a group of approx. 30 highly qualified teachers and reviews by university professors



# reife- und diplomprüfung



## *Creating Tasks for the standardized Matura (Part A)*

- 1 task = 3 – 4 independent items
- All items deal with real-life applications of mathematics
- Only open response format
- Items reflect the M-13-standards model:
  - ✓ A: Modeling
  - ✓ B: Operating / Using Technology
  - ✓ C: Interpreting
  - ✓ D: Explaining

 bildungs  
standards



*Using Technology in Mathematics*

GeoGebra<sup>4</sup>



Mathcad<sup>®</sup>

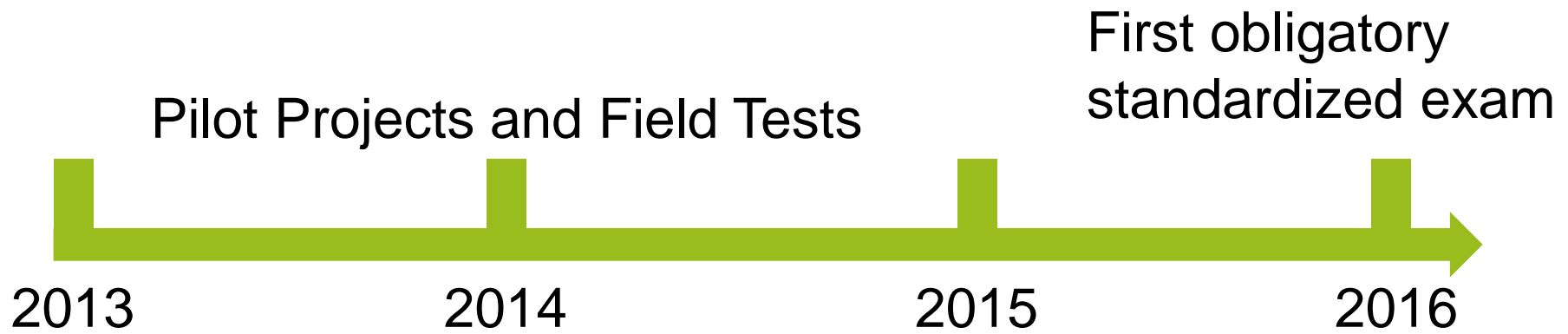


## *Prototypical Exercises*

[Link BIFIE Website – Pool of exercises](#)

Laptops		
Aufgabennummer: A_033		
Technologieeinsatz:	möglich <input checked="" type="checkbox"/>	erforderlich <input type="checkbox"/>
<p>a) Vor 2 Jahren kaufte eine Firma eine bestimmte Anzahl an Laptops um insgesamt € 9.600. Heute bekommt sie um denselben Betrag um 2 Laptops mehr, weil der Preis um € 400 pro Laptop gefallen ist.</p> <p>– Berechnen Sie, wie viele Laptops die Firma heute für € 9.600 bekommt.</p> <p>b) Eine Firma, die Laptops verkauft, hat eine quadratische Gewinnfunktion ermittelt:</p> $G(x) = -0,2 \cdot x^2 + 200 \cdot x + c$ <p>x ... Stückzahl verkaufter Laptops  G(x) ... erzielter Gewinn beim Verkauf von x Laptops in Geldeinheiten (GE)</p>		

## *Outlook & Perspectives*





Bildungsforschung, Innovation & Entwicklung  
des österreichischen Schulwesens

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