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## Developing Critical Thinking in Higher Education: Is There a Reason to Change?

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### Abstract

Competency-based veterinary education has been proposed for long, but its implementation accelerated in recent years. It endorses the development of specific abilities, that are identified, and needed for a wide range of professional tasks. Nevertheless, the University's adaptation to the proposed competency-based framework is not always easy. It often depends on economic and administrative constraints and requests some time until the completion of the reforms. This time-lapse foster the skills mismatch existing between Academia and the labor market. Think4Jobs project organized focus groups interviews with Veterinarians with experience across many professional areas (e.g., clinical, food production and food safety, research), pre-graduate students and teachers, to identify core critical thinking-related competencies deemed crucial by the

labor market. Triangulating the beliefs of Stakeholders and University detected some differences in the importance of competency domains, sustaining the need to change the pedagogical approach during learning and during the traineeships to enhance autonomy, self-regulation, and self-confidence in students' clinical reasoning and decision-making skills. Based on the identified differences, the framework presented herein was proposed to strengthen the acquisition of those competencies across existing curricula.

### Keywords

Competence-based curricula

Critical thinking

Clinical reasoning

Labor market

Soft skills development

Veterinary medicine

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### References

1. Payan-Carreira, R., Cruz, G., Dominguez, C.: We can do better: building competencies until graduation. In: Maxwell, J. (ed.) Higher Education Institutions: Perspectives, Opportunities and Challenges, pp. 107–146. Nova Science Publishers (2019)

---
2. CEDFOP. Skill mismatch: more than meets the eye. In: BRIEFING NOTE. European Centre for the Development of Vocational, Greece (2014)

---
3. Cruz, G., Payan-Carreira, R., Dominguez, C., Silva, H., Morais, F.: What critical thinking skills and dispositions do new graduates need for professional life? Views from Portuguese employers in different fields. High. Educ. Res. Dev. **40**(4), 721–737 (2021)

---
4. Domingues, C.: (coord.): Critical Thinking across European Higher Education Curricula. A European Collection of the Critical Thinking Skills and Dispositions Needed in Different Professional Fields for the 21st Century. UTAD, Vila Real (2018).  
<http://crithinkedu.utad.pt/en/intellectual-outputs/>

---
5. Barnett, R.: Learning for an unknown future. High. Educ. Res. Dev. **31**(1), 65–77 (2012)

---
6. May, S., Wade, C., Nell, A., Ravetz, G., Rhind, S.: Day One Competences. The Royal College of Veterinary Surgeons, London (2020)

---
7. Facione, P., Facione, N., Giancarlo, C.: The disposition toward critical thinking: its character, measurement,

and relationship to critical thinking skill. *Informal Logic*. **20**(1), 61–84 (2000)

---

8. Dumitru, D., et al.: A European Collection of the Critical Thinking Skills and Dispositions Needed in Different Professional Fields for the 21st Century. UTAD, Vila Real (2018)

---

  9. Brennan, P., Silman, A.: Statistical Methods for Assessing Observer Variability in Clinical Measures. *BMJ: Education & Debate* **304**(6), 1491–1494 (1992). United Kingdom

---

  10. Dumitru, D., et al.: Think4Jobs Toolkit: Ten Work-based Learning Scenarios. University of Western Macedonia, Greece (2021)

---

  11. Facione, P.A.: Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment & Instruction: The Delphi Report. California Academic Press, California (1990)
- 

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