

INTRODUCTION TO ASSESSMENT FOR HEALTHCARE PROFESSIONS EDUCATION

COURSE PROGRAMME

Assessment is a challenging topic for many teachers on the healthcare professions. Many teachers routinely ask themselves several questions about this subject. Here are some examples: "What are the purposes and uses of assessment?", "What does the evidence tell us about the best practice in the assessment of competence?", "How do I construct a good test?", "How can I write good test items?", "How do I know if my test had good quality?", "Was my assessment tool fair, valid and reliable?", "How can I give assertive feedback to my students without being offensive?", "What are the criteria for good assessment?", "How should I develop my own programme?", "Which measures can I take to make strategic use of assessment to foster learning?".

Having in mind those frequently asked questions made by teachers worldwide, the European Board of Medical Assessors has created a new course on assessment for healthcare professions education, especially designed for teachers in the beginning or intermediate levels of their careers. This one-week course covers the entire testing cycle from the definition of the uses and purposes of an assessment tool or programme, moving to test content specifications (blueprinting), item writing and reviewing, standard setting and cutscoring procedures until the interpretation of post-test psychometric analyses (e.g. classical test theory, generalizability theory, item response theory, Rasch model). Even though the course is at the introductory level, it aims to cover all the steps of the well-known Miller's competence pyramid, being dedicated not only to cognitive assessment (e.g. progress testing) but also the assessment of skills (e.g. OSCEs) and attitudes (e.g. e-portfolio).

Course instructors:

Cees van der Vleuten, PhD, is a Professor of Education of the Department of Educational Development and Research of the Faculty of Health, Medicine and Life Sciences. Since 2005 he has been the Scientific Director of the School of Health Professions Education. His primary expertise lies in evaluation and assessment. He has published widely in this domain, holds numerous academic awards, including several career awards. In 2005 he received John P. Hubbard Award for significant contribution to research and development of assessment of medical competence from the National Board of Medical Examiners in the US. In 2010 he received a Dutch royal decoration for the societal impact of his work and in 2012 the Karolinska Prize for Research in Medical Education. He frequently serves as a consultant internationally. He holds honorary academic appointments in the School of Medicine, Flinders University, Adelaide in Australia, Western Sydney University, Sydney in Australia, the University of the Witwatersrand, Johannesburg in South-Africa, and the Uniformed Services University of the Health Sciences, Bethesda, United States of America.

Carlos Collares, MD, MSc, PhD, FACMT, is Assistant Professor of Medical Education in the Department of Educational Development and Research of the Faculty of Health, Medicine and Life Sciences as well as Assessment Specialist for the European Board of Medical Assessors. He moved from Brazil to the Netherlands after applying techniques used on the validity and reliability studies of neurobehavioral test batteries to the analysis of assessment tools used in medical education, particularly progress testing. He has implemented the International Progress Test to institutions in the Netherlands, Finland, Mexico and Saudi Arabia, and collaborates with progress testing programmes in Australia and Mozambique. He has also assisted on the implementation of a computerized adaptive version of the International Progress Test, which, by dynamically adjusting the difficulty of the test according to the test takers' performance, shortens the test, reduces testing time and increases the reliability of scores, especially for students in the early academic years.

Suzanne Schut, is a staff member of the School of Health Professions Education (SHE) at Maastricht University, the Netherlands. She holds a degree in Educational Sciences. She is appointed as educational advisor within the Assessment Taskforce and responsible for the assessment and quality assurance of assessment within the Faculty of Health, Medicine and Life Sciences. She is chair of the review committee for knowledge testing. She has experience with educational development and design and several years of experience with teaching and faculty development, first focusing on educational design and innovation, and later on item and scenario writing, assessment and feedback within the workplace. Her research focuses on programmatic assessment, and more specifically the learning potential of assessment within this approach, and aims to unravel and validate the concepts underlying the theoretical model of programmatic assessment. Topics of interest are; assessment for learning; self-regulate learning, and student-teacher relationships within the assessment environment.

Day 1 morning – Evidence-based principles of assessment – Cees van der Vleuten & Carlos Collares

09.00	<i>Welcome, overview of the course, overview of the day</i>
09.15	<i>Discussion of scientific papers</i>
10.30	<i>Coffee/tea break</i>
10.45	<i>Lecture and Plenary discussion</i>
12.00	<i>Lunch</i>

This module focuses on

- The main findings on assessment in healthcare professions education available in the literature;
- Scientific evidence transformed into principles of assessment practice;
- Definitions and examples of validity and reliability evidence;
- Uses and purposes of summative and formative assessment;
- An introduction to Programmatic assessment.

Activities and working formats

- Interactive lecture;
- Small-group exercise.
- Plenary discussion

Objectives

- Knowledge of the main findings from scientific research on assessment in healthcare professions education.
- Comprehension of the evidence-based principles of assessment;
- Comprehension of the concepts of validity and reliability;
- Comprehension of the differences between summative and formative assessment;
- Comprehension of the advantages of programmatic assessment.

Preparatory and/or further reading

van der Vleuten CP, Schuwirth LW, Scheele F, Driessen EW, Hodges B. (2010). The assessment of professional competence: building blocks for theory development. *Best Pract Res Clin Obstet Gynaecol*, 24(6):703-19.

van der Vleuten, C., Sluijsmans, D., & Joosten-ten Brinke, D. (2017). Competence assessment as learner support in education. In *Competence-based Vocational and Professional Education* (pp. 607-630). Springer International Publishing.

Day 1 afternoon – Blueprinting – Carlos Collares

13.00	<i>Lecture: principles of blueprinting.</i>
13.30	<i>Small-group exercise: Creating your own blueprint</i>
14:45	<i>Coffee/tea break</i>
15.00	<i>Presentation and evaluation of blueprints created by participants</i>
16.00	<i>Plenary discussion and Take-home messages</i>
16.30	<i>Closing</i>

This module focuses on

- The importance of blueprinting for validity based on test content;
- Learning how to create and evaluate a blueprint;

Activities and working formats

- Interactive lecture;
- Small-group exercise.
- Plenary discussion

Objectives

- Comprehension of the rationale for blueprinting;
- Development and evaluation of blueprints.

Preparatory and/or further reading

Coderre, S., Woloschuk, W., & Mclaughlin, K. (2009). Twelve tips for blueprinting. *Medical teacher, 31*(4), 322-324.

Mookherjee, S., Chang, A., Boscardin, C. K., & Hauer, K. E. (2013). How to develop a competency-based examination blueprint for longitudinal standardized patient clinical skills assessments. *Medical teacher, 35*(11), 883-890.

Day 2 morning and afternoon – Item writing and standard setting – Carlos Collares

09.00	<i>Welcome and overview of the day</i>
09.10	<i>Interactive lecture: introduction to technical item writing flaws</i>
09.40	<i>Identifying technical item writing flaws in small groups</i>
10.30	<i>Coffee/tea break</i>
11.00	<i>Writing items in small groups</i>
12.00	<i>Lunch</i>
13.00	<i>Presentation and evaluation of items</i>
14.30	<i>Coffee/tea break</i>
14.45	<i>Interactive lecture: Standard setting</i>
15.15	<i>Small-group exercise: Angoff procedure</i>
16.15	<i>Plenary discussion</i>
16.30	<i>Closing</i>

This module focuses on

- Acknowledging of the impact of flawed item writing on test validity;
- The construction of good MCQ questions and;
- The identification of technical item writing flaws.
- Standard setting and cutscoring methods.

Activities and working formats

- Interactive lecture;
- Item review in small groups;
- Item construction in small groups;
- Plenary discussion of results.
- Take-home messages.

Objectives

- Insight in the tips and tricks for the construction of multiple choice questions (MCQs);
- Practicing item writing and reviewing for MCQ assessment.
- Comprehension of standard setting and cutscoring methods.

Preparatory and/or further reading

Schuwirth, L.W.T., Vleuten, C.P.M. van der (2003). ABC of learning and teaching in medicine: Written assessment. *British Medical Journal*, 326, 643-645.

Case, S. M., & Swanson, D. B. (2001). *Constructing written test questions for the basic and clinical sciences*. Philadelphia: National Board of Medical Examiners.

De Champlain, A. F. (2014). Standard setting methods in medical education. *Understanding Medical Education: Evidence, Theory and Practice*, 305-316.

Norcini, J. J. (2003). Setting standards on educational tests. *Medical education*, 37(5), 464-469.

Day 3 morning – Progress Testing – Carlos Collares

- 09:00 *Welcome and overview of the day*
- 09:10 *Interactive lecture: Measuring meaningful learning: rationale, validity and reliability of progress testing*
- 10:30 *Coffee/tea break*
- 10:45 *Interactive lecture: The future of progress testing is now: international collaborations, feedback system, computerized adaptive progress testing and beyond*
- 12:00 *Lunch*

This module focuses on

- Progress test as an evidence-based assessment tool;
- Progress test as a tool to improve learning;
- New technologies applied to progress testing.

Activities and working formats

- Interactive lectures;

Objectives

- Better understanding of the possibilities of progress testing and its breakthrough developments.

Preparatory and further reading

Wrigley, W., van der Vleuten. C.P., Freeman A., Muijtjens. A. (2012). A systemic framework for the progress test: strengths, constraints and issues: AMEE Guide No. 71. *Medical teacher*, 34(9), 683-97.

Day 3 afternoon – OSCEs – Cees van der Vleuten

13:00 *What are OSCEs?*

13:30 *Designing an OSCE*
- *Patient role*
- *Checklist or rating scale construction*
- *Examiner instruction*

14:45 *Coffee/tea break*

15:00 *Designing an OSCE continued*

15:30 *Do's and Don'ts of OSCEs*

16:30 *Closing*

This module focuses on

- Objective Structured Clinical Examinations (OSCEs) as a standardized way to assess behavioural performance
- What OSCEs can and cannot do
- When to use checklists or rating scales

Activities and working formats

- Workshop;

Objectives

- Better understanding of the possibilities of OSCEs.

Preparatory and further reading

Khan, K. Z., Ramachandran, S., Gaunt, K., & Pushkar, P. (2013). The objective structured clinical examination (OSCE): AMEE guide no. 81. Part I: an historical and theoretical perspective. *Medical teacher*, 35(9), e1437-e1446.

Swanson, D. B., & van der Vleuten, C. P. (2013). Assessment of clinical skills with standardized patients: state of the art revisited. *Teaching and learning in medicine*, 25(sup1), S17-S25.

Day 4 morning – Classical Test Theory and Generalizability Theory – Cees van der Vleuten

09.00	<i>Welcome and overview of the day</i>
09.10	<i>Interactive lecture: The nuts and bolts of generalizability theory?</i>
10.30	<i>Coffee/tea break</i>
10.45	<i>Making sense out of published papers using generalizability theory.</i>
12.00	<i>Lunch</i>

This module focuses on

- Why and when is generalizability theory useful?
- What is a generalizability study?
- What is a decision study?

Activities and working formats

- Interactive lectures;
- Small-group exercises.

Objectives

- Comprehension of fundamental concepts of generalizability theory;
- Enabling participants to interpret generalizability theory analysis.

Preparatory reading

Bloch, R., & Norman, G. (2012). Generalizability theory for the perplexed: a practical introduction and guide: AMEE Guide No. 68. *Medical teacher*, 34(11), 960-992.

Further reading

Shavelson, R. J., & Webb, N. M. (1991). *Generalizability theory: A primer*. Sage.
Brennan RL. *Generalizability Theory*. Iowa: ACT Publications, New York: Springer 2001.

Day 4 afternoon – Rasch model, Item response theory and Simulated Post-Test Review Committee – Carlos Collares

13.00	<i>Interactive lecture: making sense of the Rasch model and item response theory</i>
14.30	<i>Coffee/tea break</i>
14.45	<i>Practical exercise: simulated post-test review committee using the results of psychometric analyses</i>
16.00	<i>Plenary discussion and Take-home messages</i>
16.30	<i>Closing</i>

This module focuses on

- Rasch model and Item Response Theory;
- Practical application of psychometric analyses on a simulated post-test review.

Activities and working formats

- Interactive lectures;
- Practical exercises.

Objectives

- Comprehension the Rasch model and item response theory;
- Enabling participants to interpret psychometric analyses in a useful way for post-test reviews.

Preparatory and/or further reading

De Champlain, A. F. (2010). A primer on classical test theory and item response theory for assessments in medical education. *Medical education*, 44(1), 109-117.

Downing, S. M. (2003). Item response theory: applications of modern test theory in medical education. *Medical Education*, 37(8), 739-745.

Day 5 morning – Work-based assessment & Programmatic Assessment – Cees van der Vleuten, Suzanne Schut, Carlos Collares

09.00	<i>Welcome and overview of the day</i>
09.10	<i>Interactive lecture: principles of work-based assessment</i>
09.50	<i>Role-playing: giving and receiving feedback in a simulated Mini-CEx</i>
10.30	<i>Coffee/tea break</i>
10.45	<i>Role playing: simulated electronic portfolio assessment</i>
11.30	<i>Interactive lecture: a programmatic approach to assessment</i>
12.15	<i>Plenary discussion and Take-home messages</i>
12.30	Closing (certificates, snacks and drinks)

This module focuses on

- Work-based assessment
- Criteria for effective feedback
- Exercising feedback skills
- Programmatic Assessment

Activities and working formats

- Interactive lectures;
- Role playing.

Objectives

- Enabling participants to give effective feedback;
- Comprehension of the benefits of electronic portfolios.

Preparatory and/or further reading

Cook, D. A., Kuper, A., Hatala, R., & Ginsburg, S. (2016). When assessment data are words: validity evidence for qualitative educational assessments. *Academic Medicine*, 91(10), 1359-1369.

Driessen, E.W. & Overeem, K. (2013) Mentoring. In Walsh, K. (Ed.) *Oxford Textbook of Medical Education*. p. 265-284.

Govaerts, M., & Vleuten, C. P. (2013). Validity in work-based assessment: expanding our horizons. *Medical education*, 47(12), 1164-1174.

Harrison, C. J., Könings, K. D., Schuwirth, L., Wass, V., & van der Vleuten, C. (2015). Barriers to the uptake and use of feedback in the context of summative assessment. *Advances in health sciences education*, 20(1), 229-245.

van der Schaaf, M., Donkers, J., Slof, B., Moonen-van Loon, J., van Tartwijk, J., Driessen, E.,... & Ten Cate, O. (2017). Improving workplace-based assessment and feedback by an E-portfolio enhanced with learning analytics. *Educational Technology Research and Development*, 65(2), 359-380.

Watling, C., Driessen, E., Vleuten, C. P., & Lingard, L. (2014). Learning culture and feedback: an international study of medical athletes and musicians. *Medical education*, 48(7), 713-723.

Schuwirth LW, Van der Vleuten CP (2011). Programmatic assessment: From assessment of learning to assessment for learning. *Medical teacher*, 33(6),478-85.