

Appendix 4: Source and level of evidence in support of problem-based learning for self-assessed competencies, by study quality*

Self-assessed competency	High-quality studies, reference no.			Low quality studies, reference no.			Level of evidence
	Positive result	No difference	Negative result	Positive result	No difference	Negative results	
Overall/global dimension	35						Weak
Technical dimension							
Clerking (e.g., history-taking, physical examination)		30, 35		38, 39			Weak
Selection of investigations		30, 32/33§					None
Diagnostic skills or accuracy	35	30, 32/33§					Weak
Approach to management		35					None
Treatment (including prescribing)		30, 32/33§					None
Procedural skills	30						Weak
Continuity of care	30, 35						Strong
Social dimension							
Communication skills†	30	32/33§		36			Moderate
Interpersonal skills	35			39			Moderate
Teamwork skills	30, 32/33§, 35			39	36, 37		Strong
Appreciation of social and emotional aspects of health care	30, 32/33§						Strong
Appreciation of cultural aspects of health care	30	32/33§					Weak
Appreciation of legal and ethical aspects of health care†	30, 32/33§						Strong
Preventive health care and health promotion	32/33§	30					Weak
Appropriate attitudes toward personal health and well-being	30, 32/33§						Strong
Cognitive dimension							
Self-directed or continuing learning†	35	28		39			Moderate
Problem-solving				39			Weak
Independence, initiative				39	36, 37		Weak
Responsibility, reliability							NA
Coping with uncertainty†	30, 35	32/33§					Strong
Critical thinking					36		None
Awareness of own limitations		30, 32/33§					None
Ability to work under pressure					39		None
Creativity				39	37		Weak
Clinical judgment, reasoning	35						Weak
Use of computers, information resources	30, 32/33§			39	37		Strong
Understanding evidence-based medicine	30, 32/33§	28					Strong
Managerial dimension							
Time management and organizational skills		30, 32/33§		39	37		Weak
Keeping accurate records		30, 32/33§					None
Self- or peer appraisal‡	30						Weak
Attention to health care costs		35			36		None

Research dimension					
Research and presentation skills		39		Weak	
Writing reports or articles			39	Weak¶	
Teaching dimension					
Teaching medical students				NA	
Patient education	35		36	Weak	
Knowledge dimension					
Possession of medical knowledge		30, 32/33§	36	39	Strong¶¶
Use of medical knowledge			37	Weak	

Note: NA = not available.

*Evidence for self-assessed competencies was obtained from references 28, 30, 32, 33, 35, 36, 37 and 39. An abridged version of this appendix appeared as Table 3 in the main article (*CMAJ* 2008; 178:xxx-x)

†Moderate to strong level of evidence resulted from both self-assessments and observed assessments.

‡Studies 35 and 36 were excluded from the evaluation of this competency because their study populations included overlapping cohorts and their differing outcomes could change the level of evidence for the competency.

§References 32 and 33 were treated as one study.

¶Level of evidence in favour of graduates in the control group.