

Appendix 5: Source and level of evidence in support of problem-based learning for observed competencies, by study quality*

Observed 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 result	
Overall/global dimension	29			38, 41/42‡			Moderate
Technical dimension							
Clerking skills (e.g., history-taking, physical examination)	29	31		41/42‡			Moderate
Selection of investigations		30, 32/33‡					None
Diagnostic skills or accuracy	29, 32/33‡, 34	30, 31					Strong
Approach to management		31					None
Treatment (including prescribing)	32/33‡	30, 34					Weak
Procedural skills		30, 31, 32/33‡					None
Continuity of care		30					None
Social dimension							
Communication skills†	29, 30, 32/33‡				36		Strong
Interpersonal skills				41/42‡			Weak
Teamwork skills		29, 30, 32/33‡		41/42‡	36		Weak
Appreciation of social and emotional aspects of health care	32/33‡	29, 30					Weak
Appreciation of cultural aspects of health care	30, 32/33‡						Strong
Appreciation of legal and ethical aspects of health care†	30, 32/33‡						Strong
Preventive health care and health promotion		30, 32/33‡					None
Appropriate attitudes towards personal health and well-being		30, 32/33‡					None
Cognitive dimension							
Self-directed or continuing learning†	31			41/42‡	40		Moderate
Problem-solving				41/42‡			Weak
Independence, initiative	29	31			36		Weak
Responsibility, reliability	29, 31			41/42‡			Strong
Coping with uncertainty†	30, 32/33‡						Strong
Critical thinking				41/42‡	36		Weak
Awareness of own limitations		30, 32/33‡					None
Ability to work under pressure		29					None
Creativity							NA
Clinical judgement, reasoning		31					None
Use of computers, information resources	32/33‡	30					Weak
Understanding evidence-based medicine	32/33‡	30					Weak
Managerial dimension							
Time management and organizational skills	32/33‡	30					Weak
Keeping accurate records		30, 32/33‡					None

Self- or peer appraisal	29, 30		41/42‡	36	Strong
Attention to health care costs			36		Weak
Research dimension					
Research and presentation skills	29				Weak
Writing reports or articles					NA
Teaching dimension					
Teaching medical students	29	31			Weak
Patient education				36	None
Knowledge dimension					
Possession of medical knowledge	29	30, 31	32/33‡	36	None
Use of medical knowledge					NA

Note: NA = not available.

*Evidence for observer-assessed competencies was obtained from references 29, 30, 31, 32, 33, 34, 36, 38, 40, 41 and 42. 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.

‡References 32 and 33 were treated as one study, as were references 41 and 42.