

Definitions and Goals of “Self-directed Learning” in Contemporary Medical Education Literature

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Abstract

Introduction: Self-directed learning (SDL) has been an essential issue in medical education due to the expansion of knowledge, accessibility to information and greater emphasis on reflection. If SDL in educational research lacks a clear definition, terminological confusion may hinder the application of the results to practice. The aim of this study was to review and categorise the various forms of SDL described in the contemporary literature. **Methods:** A search of Medline was conducted using the key word “self-directed learning”. Articles published between 2000 and 2004 were extracted. Review articles, letters and articles from health profession education other than medical education, were excluded. Sixty-three articles were analysed in 2 stages: first, whether the definition of SDL is explicitly described was investigated and next, contents in the articles on SDL were qualitatively analysed using a framework approach. The concept of a compassionate-empathic physician, as developed by Carmel and Glick (1996), was used as the framework. **Results:** Only 5 articles (8.0%) had an explicit and concrete definition of SDL. Content analysis showed that 26 (50.0%) of the 52 articles dealt with SDL only in the scientific-technical dimension, 3 (5.8%) dealt with that only in the socio-emotional dimension and 23 (44.2%) did so in both dimensions. **Conclusion:** Although many researchers use the term “self-directed learning”, only a few clearly defined it to avoid semantic confusion. Scientific-technical goals tended to be discussed more frequently in SDL. From a patient-centred viewpoint, socio-emotional goals should be stressed more.

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Introduction

Self-directed learning (SDL) has been one of the predominant issues in the study and practice of medical education in the last 4 decades. The impetus for the growing trend of SDL, in undergraduate as well as postgraduate education, results from the rapid advancement of science.¹ In this educational trend, the term “self-directed learning” is often used along with a variety of educational concepts such as lifelong learning, continuous medical education, active/independent learning, student-centred education, etc.

The history of SDL can be said to date back to the ancient Greek philosophers.² Studies on SDL have developed along 2 pathways, SDL as a *goal* and SDL as a *method* with several theoretical approaches.^{3,4} These pathways involve an understanding of the attributes associated with self-

direction and an understanding of the process of self-direction. The term “self-direction” or “self-directedness” has also been discussed—Candy⁵ described self-directedness in SDL in 4 dimensions, involving personal autonomy, self-management, learner control and the independent pursuit of learning. He also extracted approximately 100 traits associated with self-direction in the literature review.⁴ Because of its diversity, SDL can cause conflict in the case of curricular innovation.⁶ In a situation where the concepts of SDL are fuzzy, it is very important to explicitly state its definition in each study in order to avoid misinterpretation of SDL. The aim of this study was to review and categorise the various forms of SDL described in recent published articles.

Methods

A Medline search was conducted in February 2005 using

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the key word “self-directed learning”. The search was limited to articles published between 2000 and 2004 as the authors’ intention was to focus on the most recent trend in using an educational concept of SDL in medical education. Exclusion criteria were: (1) review articles, (2) letters, (3) articles referring to health profession education other than medical education, and (4) articles written in languages other than English. Extracted articles mainly involve the following themes: the introduction of new programmes or training methods, programme or instrument evaluation, the development of evaluation tools and the discussion of educational goals such as professionalism or SDL itself.

Sixty-three articles were collected and analysed in 2 stages. Firstly, definitive description was reviewed, focusing only on its explicitness, disregarding the adequacy of the definition. The first author was responsible for checking each article twice at a 5-month interval to increase trustworthiness. Secondly, contents in the articles on SDL were qualitatively analysed using a framework approach. The concept of patient care developed by Carmel and Glick⁷ was used as the framework. Their concept derives from the multidimensional clinical paradigm advocated by Engel.⁸ To confirm the reliability of categorisation, the first and third authors independently categorised 5 randomly selected articles after they had agreed upon the grand rule for categorisation. Both authors resulted in achieving the same categorisation for all.

Results

Thirty-five articles (55.6%) discussed SDL for undergraduate students,⁹⁻⁴³ while 25 articles (39.6%) for postgraduates or practitioners as learners.⁴⁴⁻⁶⁸ The remaining 3 articles on SDL dealt with postgraduates and undergraduates,⁶⁹ postgraduates and practitioners,⁷⁰ and faculty.⁷¹

Only 5 articles (8.0%) clearly stated the definition of SDL, where the authors used phrases such as “SDL is described/defined here...” and “SDL is (maybe) ...” (Table 1).^{14, 45, 53, 62, 71} What are the descriptions of SDL the authors provided in these 5 articles? Schmidt¹⁴ focused on learning activities. Shannon⁴⁵ concentrated on personal aspects involving “autonomy” and “self-management.” As opposed to their explicit definitions, there was implicitness in the meaning of the word “self” involved in Gillespie’s⁶² description of “SDL is maybe self-learning ...” and the word “independent” involved in Rahman et al’s⁷¹ description of “SDL i.e., independent study”. These resulted in some semantic ambiguity, yet these were categorised as “clearly defined” because readers are able to identify how vague it is. Although “independent” in “independent study” explained by Ozuah et al⁵³ also included ambiguity, he defined SDL by the quantitative method of “time per

Table 1. Definition of Self-directed Learning in 63 Articles

Explicit description of definition in 5 articles (8.0%):

- “as the preparedness of a student to engage in learning activities defined by himself rather than a teacher”¹⁴
- “an independent pursuit that involves a philosophy of personal autonomy and self-management” (Candy 1991)⁴⁵
- “self-learning with searching skills”⁶²
- “i.e., independent study”⁷¹
- “operationally defined as the average time per week spent for independent study”⁵³

week.” Thus, explicit definition of SDL seems very difficult and only a few met this loose criterion.

In the other 56 articles (92.0%), explicit definitions such as those mentioned above were not found. Among these, 5 articles described some aspects of SDL,^{23, 28, 29, 64, 66} of which 3 articles described the components involved in SDL.^{23, 64, 66} Sanson-Fisher et al²³ described a component of SDL in terms of the setting of undergraduate learning goals. Beckman et al⁶⁴ presented peer-review items related to SDL by asking whether physicians as teachers encouraged the learners to pursue literature, motivated them to learn on their own, and encouraged them to do outside reading. Deans et al⁶⁶ also described questionnaire items on SDL where postgraduate learners were asked to try to evaluate their own performances and identify their learning needs. In the other 2 articles, the authors followed the General Medical Council description, but the description itself was not clear.^{28, 29}

During the above investigation of definition, it was noticed that 52 articles^{10-17, 19-30, 32, 33, 35-41, 44, 46-48, 50-53, 55-69} explained the *goals* of SDL specifically and concretely, and content analysis was performed for these articles. Since patient-centredness has been advocated in clinical medicine, many undergraduate and postgraduate curricula have incorporated this concept. The biopsychosocial model is emphasised in these circumstances. Therefore, the contents of SDL were analysed using a framework that is based on this model. The biopsychosocial model in clinical medicine, originally advocated by Engel⁸ in 1977 as opposed to the biological model, is an approach to a patient’s psychological and social factors as well as his/her biochemical factors. Articles including the goals of SDL for biomedical knowledge and skills were categorised in the scientific-technical dimension of patient care. Articles including the goals for patient-physician relationship/communication or ethics were categorised in the socio-emotional dimension. Twenty-six articles (50.0%) described the goal(s) of SDL only in the scientific-technical

dimension^{10,12,13,17,19,20,22,25-27,33,36,40,41,46,50,51,53,55,56,60,61-64,68} and 3 articles (5.8%) only in the socio-emotional dimension.^{29,30,57} The other 23 articles (44.2%) involved both dimensions.^{11,14-16,21,23,24,28,32,35,37-39,44,47,48,52,58,59,65-67,69} SDL in the scientific-technical dimension was found in a total of 49 articles (94.2%), while that in the socio-emotional dimension was found in 26 articles (50.0%). SDL used in the scientific-technical dimension was for the purpose of acquiring scientific knowledge or medical examination skills, or developing resource access or information searching. SDL used in the socio-emotional dimension, on the other hand, was for developing patient-physician communication skills, or fostering ethical or altruistic attitudes.

Discussion

SDL, an interesting issue and an educational innovation in medicine, was explicitly defined in only a few articles published in the last 4 years. This is a matter of concern for effective communication with regard to SDL among medical educators/teachers who need global information exchange.

Why is SDL defined so scarcely? There are 3 possible reasons. Firstly, medical educators might simply believe in presenting a concept without necessarily referring to educational theories. SDL has been studied with different *approaches*, including cognitive/constructivist, social learning, and humanist approaches. The importance of individual experiences, the relationship between social/environmental aspects and individual learning, the degree of transfer occurring among different areas of learning, and views of human nature itself are all related to different perspectives of SDL. This conceptual difference may result in diverse views of SDL. It is, therefore, important to pay attention to the theoretical background in order to discuss SDL effectively, and to understand others' differences or sameness of views.

Secondly, researchers may regard SDL as simple *skills*, e.g., learning skills, data searching skills, critical appraisal skills, or knowledge application skills of evidence to the real setting. Such views of SDL as a series of skills imply that the objectives for SDL will be more concrete if SDL is divided into such tasks of skills. If the objectives are not so concrete, learners would find it difficult to achieve them, especially when they have to learn for themselves. In that condition, further definition of SDL will not be demanded.

Thirdly, SDL is sometimes viewed as an attribute of the learner's own characteristics. This tendency is historically understandable, because the first study of SDL involved the categorical analysis of interviews with 22 adult learners in 1961.² Since then personal elements and assessment tools have been developed, including the frequently used Self-Directed Learning Readiness Scale (SDLRS).²

Viewing SDL from only personal attributes or characteristics might cause the social/environmental aspects of SDL to be overlooked.

From the viewpoint of physicians' behaviour for patient welfare, 2 crucial dimensions, scientific-technical and socio-emotional, are emphasised.⁷ Using this concept as a categorical framework, about half of published articles specified SDL only for the scientific-technical dimension, while less than 10% did so only for the socio-emotional dimension. One possible reason is that educators have a clearer idea of how to promote SDL in the scientific-technical dimension than SDL in the socio-emotional dimension. If patient-centredness and patient welfare in medicine are considered, it is natural to think that goals of SDL in the socio-emotional aspect of patient care should be stressed more. From the characteristics of SDL, however, learners may find it difficult to set their own goals, to decide what and how to learn, and to assess the advancement. These are important issues to be studied at the present time when empathy and humanities in doctoring as well as patients' perspectives on their own illnesses are emphasised in medical education.

Then, is it possible to use the strategy of SDL for socio-emotional aspect? We believe the answer is yes. For example, reading, one of the main strategies of self-study, could be used for SDL in this aspect. Uses of reading and/or writing literary works to educate humanities in under/postgraduate curricula have been reported.⁷²⁻⁷⁴ Two studies^{75,76} presented the evidences of short-term effects of literary reading in clerkship programmes on educating importance of patients' perspectives. The most difficult point may be for medical educators/teachers to realise how students are learning the socio-emotional aspect by various strategies other than reading and writing over a long period.

This study has several limitations. The only database used for the present study was Medline, and other sources of information would have altered the statistics obtained in this study. Historical papers, not the ones reviewed, might have different perspectives. Other approaches for content analysis would have suggested different views of SDL.

Conclusions

Two conclusions emerged from the present study. Firstly, the term SDL should be clearly defined to avoid semantic confusion and professional miscommunication. A clearer definition would lead to effective interactions among global medical educators, and their better understanding of SDL. This also suggests that interest in theories or theoretical models on SDL ought to be included among medical educators. Secondly, SDL focusing more on the socio-emotional aspect is an important issue in the study and practices of medical education.

REFERENCES

- Custers EJFM, Boshuizen HPA. Psychology of learning. In: Norman GR, van der Vleuten CPM, Newble DI, editors. *International Handbook of Research in Medical Education*. Dordrecht: Kluwer Academic Publishers, 2002:192.
- Hiemstra R. Self-directed learning. In: Husen T, Postlethwaite TN, editors. *The International Encyclopedia of Education*. 2nd ed. Oxford: Pergamon Press. Available at <http://home.twny.rr.com/hiemstra/sdlhdbk.html>. Accessed on 28 February 2005.
- Kaufman DM, Mann KV, Jennett PA. *Teaching and Learning in Medical Education: How Theory Can Inform Practice*. Edinburgh (UK): Association for the Study of Medical Education, 2000:24-5.
- Mann KV. Continuing medical education. In: Norman GR, van der Vleuten CPM, Newble DI, editors. *International Handbook of Research in Medical Education*. Dordrecht: Kluwer Academic Publishers, 2002:415-57.
- Candy PC. *Self-Direction for Lifelong Learning: A Comprehensive Guide to Theory and Practice*. San Francisco: Jossey-Bass Publishers, 1991:97-244.
- Mifflin BM, Campbell CB, Price DA. A conceptual framework to guide the development of self-directed, lifelong learning in problem-based medical curricula. *Med Educ* 2003;34:299-306.
- Carmel S, Glick S. Compassionate-empathetic physicians: personality traits and social organizational factors that enhance or inhibit this behavior pattern. *Soc Sci Med* 1996;43:1253-61.
- Engel GL. The need for a new medical model: a challenge for biomedicine. *Science* 1977;196:129-36.
- Pololi I, Price J. Validation and use of an instrument to measure the learning environment as perceived by medical students. *Teach Learn Med* 2000;12:201-7.
- Abraham S, McBride A. Contraception: a new practical learning package. *Med Educ* 2000;34:679-81.
- Fitzgerald JT, Gruppen LD, White CB. The influence of task formats on the accuracy of medical students' self-assessments. *Acad Med* 2000;75:737-41.
- Gruppen LD, White C, Fitzgerald JT, Grum CM, Woolliscroft JO. Medical students' self-assessments and their allocations of learning time. *Acad Med* 2000;75:374-9.
- Fukuchi SG, Offutt LA, Sacks J, Mann BD. Teaching a multidisciplinary approach to cancer treatment during surgical clerkship via an interactive board game. *Am J Surg* 2000;179:337-40.
- Schmidt HG. Assumptions underlying self-directed learning may be false. *Med Educ* 2000;34:243-5.
- Blue AV, Carr D, Del Bene V, McCurdy L. Curricular renewal for the new millennium at the Medical University of South Carolina College of Medicine. *J S C Med Assoc* 2000;96:22-7.
- Nagoshi MH. Role of standardized patients in medical education. *Hawaii Med J* 2001;60:323-4.
- Perrot LJ, Deloney LA, Hastings JK, Savell S, Savidge M. Measuring student motivation in health professions' colleges. *Adv Health Sci Educ Theory Pract* 2001;6:193-203.
- van Luijk S, van der Vleuten CP. Assessment in problem-based learning (PBL). *Ann Acad Med Singapore* 2001;30:347-52.
- Nicholson S, Osonnaya C, Carter YH, Savage W, Hennessy E, Collinson S. Designing a community-based fourth-year obstetrics and gynaecology module: an example for innovative curriculum development. *Med Educ* 2001;35:398-403.
- Westendorp MW, McGraw RC. Computer-assisted instruction of carpal bone radiograph interpretation. *Med Teach* 2002;24:605-8.
- Osonnaya C, Osonnaya K, Burke FW. Community-oriented medical emergency programme: development and evaluation issues. *Med Teach* 2002;24:491-4.
- Reid S, Usherwood T. Self-directed learning during community-based placements. *Med Educ* 2002;36:1090-1.
- Sanson-Fisher RW, Rolfe IE, Jones P, Ringland C, Agrez M. Training a new way to learn clinical skills: systematic clinical appraisal and learning. *Med Educ* 2002;36:1028-34.
- Supiano MA, Fantone JC, Grum C. A Web-based geriatrics portfolio to document medical students' learning outcomes. *Acad Med* 2002;77:937-8.
- Lowitt NR. Assessment of an integrated curriculum in radiology. *Acad Med* 2002;77:933.
- Broudo M, Walsh C. MEDICOL: online learning in medicine and dentistry. *Acad Med* 2002;77:926-7.
- Hammoud MM, Barclay ML. Development of a web-based question database for students' self-assessment. *Acad Med* 2002;77:925.
- Whitehouse CR, O'Neill P, Dornan T. Building confidence for work as house officers: student experience in the final year of a new problem-based curriculum. *Med Educ* 2002;36:718-27.
- Jha V, Duffy S, Murdoch-Eaton D. Development of transferable skills during short special study modules: students' self-appraisal. *Med Teach* 2002;24:202-4.
- Dixon-Woods M, Regan J, Robertson N, Young B, Cordle C, Tobin M. Teaching and learning about human sexuality in undergraduate medical education. *Med Educ* 2002;36:432-40.
- Shokar GS, Shokar NK, Romero CM, Bulik RJ. Self-directed learning: looking at outcomes with medical students. *Fam Med* 2002;34:197-200.
- Trevena LJ, Clarke RM. Self-directed learning in population health: a clinically relevant approach for medical students. *Am J Prev Med* 2002;22:59-65.
- Stark P, Fortune F. Teaching clinical skills in developing countries: are clinical skills centres the answer? *Educ Health (Abingdon)* 2003;16:298-306.
- Harvey BJ, Rothman AI, Frecker RC. Effect of an undergraduate medical curriculum on students' self-directed learning. *Acad Med* 2003;78:1259-65.
- Dornan T, Scherpbier A, Boshuizen H. Towards valid measures of self-directed clinical learning. *Med Educ* 2003;37:983-91.
- Hauer KE, Teherani A, Wiese J, Fenton CL. A strategy to standardize the learning of core clerkship objectives. *Adv Health Sci Educ Theory Pract* 2003;8:213-21.
- Wolpaw TM, Wolpaw DR, Papp KK. SNAPPS: a learner-centered model for patient education. *Acad Med* 2003;78:893-8.
- Alford RL, Friedman TB, Keats BJ, Kimberling WJ, Proud VK, Smith RJ, et al. Early childhood hearing loss: clinical and molecular genetics. An educational slide set of the American College of Medical Genetics. *Genet Med* 2003;5:338-41.
- Abraham S, Chapman M, Taylor A, McBride A, Boye C. Anxiety and feelings of medical students conducting their first gynecological examination. *J Psychosom Obstet Gynaecol* 2003;24:39-44.
- Ganguly PK, Chakravarty M, Latif NA, Osman M, Abu-Hijleh M. Teaching of anatomy in a problem-based curriculum at the Arabian Gulf University: the new face of the museum. *Clin Anat* 2003;16:256-61.
- Mahoney JF, Cox M, Gwyther RE, O'Dell DV, Paulman PM, Kowlowitz V. Evidence-based and population-based medicine: national implementation under the UME-21 project. *Fam Med* 2004;36:S31-S35.
- Lloyd-Jones G, Hak T. Self-directed learning and student pragmatism. *Adv Health Sci Educ Theory Pract* 2004;9:61-73.
- Rahman ME, Rahman S, Musa KM, Shubra MR. Knowledge and attitude of clinical students on problem based learning. *Mymensingh Med J* 2004;13:125-9.
- Shaw M. Proposing continuing medical education for the Pacific. *Pac Health Dialog* 2000;7:86-7.
- Shannon S. Self-directed learning and continuing professional development. *Can Assoc Radiol J* 2000;51:326-7.

46. Green ML, Ciampi MA, Ellis PJ. Residents' medical information needs in clinic: are they being met? *Am J Med* 2000;109:218-23.
47. Lloyd G, Skarratts D, Robinson N, Reid C. Communication skills training for emergency department senior house officers – a qualitative study. *J Accid Emerg Med* 2000;17:246-50.
48. Fung MF, Walker M, Fung KF, Temple L, Lajoie F, Bellemare G, et al. An internet-based learning portfolio in resident education: the KOALA multicentre programme. *Med Educ* 2000;34:474-9.
49. Booth B, Lawrance R. The learning preferences of rural and remote general practitioners. A quantitative analysis and its implications for the RACGP QA &CE program. *Aust Fam Physician* 2000;29:994-8.
50. Vidal SA, Ronfani L, da Mota Silveira S, Mello MJ, dos Santos ER, Buzzetti R, et al. Comparison of two training strategies for essential newborn care in Brazil. *Bull World Health Organ* 2001;79:1024-31.
51. Khera N, Stroobant J, Primhak RA, Gupta R, Davies H. Training the ideal hospital doctor: the specialist registrars' perspective. *Med Educ* 2001;5:957-66.
52. Williams C, Cantillon P, Cochrane M. The clinical and educational experiences of pre-registration house officers in general practice. *Med Educ* 2001;35:774-81.
53. Ozuah PO, Curtis J, Stein RE. Impact of problem-based learning on residents' self-directed learning. *Arch Pediatr Adolesc Med* 2001;155:669-72.
54. Borduas F, Gagnon R, Lacoursiere Y, Laprise R. The longitudinal case study: from Schon's model to self-directed learning. *J Contin Educ Health Prof* 2001;21:103-9.
55. Colliver CP, Crowe AT, Stinson RA, Chu SY, Houlden RL. The continuing professional development for the Canadian Society of Clinical chemists and the Canadian Academy of Clinical Biochemists. *Clin Biochem* 2001;34:91-6.
56. DeWitt DE, Migeon M, LeBlond R, Carline JD, Francis L, Irby DM. Insights from outstanding rural internal medicine residency rotations at the University of Washington. *Acad Med* 2001;76:273-81.
57. Chou C, Lee K. Improving residents' interviewing skills by group videotape review. *Acad Med* 2002;77:744.
58. Taylor CM, Wall DW, Taylor CL. Appraisal of doctors: problems with terminology and a philosophical tension. *Med Educ* 2002;36:667-71.
59. Duff P. Professionalism in medicine: an A-Z primer. *Obstet Gynecol* 2002;99:1127-8.
60. Sibbett CH, Thompson WT, Crawford M, McKnight A. Evaluation of extended training for general practice in Northern Ireland: qualitative study. *BMJ* 2003;327:971-3.
61. Bravata DM, Huot SJ, Abernathy HS, Skeff KM, Bravata DM. The development and implementation of a curriculum to improve clinicians' self-directed learning skills: a pilot project. *BMC Med Educ* 2003;3:7.
62. Gillespie LD, Gillespie WJ. Finding current evidence: search strategies and common database. *Clin Orthop* 2003;413:133-45.
63. Mamary E, Charles P. Promoting self-directed learning for continuing medical education. *Med Teach* 2003;25:188-90.
64. Beckman TJ, Lee MC, Rohren CH, Pankratz VS. Evaluating an instrument for the peer review of inpatient teaching. *Med Teach* 2003;25:131-5.
65. Kelly DR, MacKay L. CELT: a computerised evaluative learning tool for continuing professional development. *Med Educ* 2003;37:358-67.
66. Deans SJ, Barratt AL, Hendry GD, Lyon PM. Preparedness for hospital practice among graduates of a problem-based, graduate-entry medical program. *Med J Aust* 2003;178:163-6.
67. Gagliardi A, Smith A, Goel V, DePetrillo D. Feasibility study of multidisciplinary oncology rounds by videoconference for surgeons in remote locales. *BMC Med Inform Decis Mak* 2003;3:7.
68. Cheong YC. Can formal education and training improve the outcome of instrumental delivery? *Eur J Obstet Gynecol Reprod Biol* 2004;113:139-44.
69. Bradley P, Postlethwaite K. Setting up a clinical skills learning facility. *Med Educ* 2003;37:S1:6-13.
70. Kneebone R, ApSimon D. Surgical skills training: simulation and multimedia combined. *Med Educ* 2001;35:909-15.
71. Rahman ME, Rahman S, Musa KM, Shubra MR. Knowledge and attitude of faculty members on problem based learning. *Mymensingh Med J* 2004;13:20-4.
72. Hunter KM, Charon R, Coulehan JL. The study of literature in medical education. *Acad Med* 1995;70:787-94.
73. Herman J. Reading for empathy. *Med Hypotheses* 2000;54:167-8.
74. Charon R. Reading, writing, and doctoring: literature and medicine. *Am J Med Sci* 2000;319:285-91.
75. Shapiro J, Morrison E, Boker J. Teaching empathy to first year medical student: evaluation of an elective literature and medicine course. *Educ Health* 2004;17:73-84.
76. Shapiro J, Duke A, Boker J, Sue Ahearn C. Just a spoonful of humanities makes the medicine go down: introducing literature into a family medicine clerkship. *Med Educ* 2005;39:605-12.