Education for Health, Vol. 15, No. 3, 2002, 362–369

Taylor&Francis healthsciences

POSITION PAPER

The Ambiguous and Bewitching Power of Knowledge, Skills and Attitudes Leads to Confusing Statements of Learning Objectives

J-J. GUILBERT

Education of Health Personnel, 15 Avenue du Mail, CH-1205 Geneva, Switzerland

ABSTRACT *The words "knowledge", "skills" and "attitudes" are given different meanings by health personnel when discussing educational issues. Ambiguity is known as a handicap to efficient communication. In the design of a curriculum the quality of the definition of learning objectives plays a fundamental role. If learning objectives lack clarity, learners and teachers will face operational difficulties. As Robert Mager said, "If you are not certain of where you are going you may very well end up somewhere else and not even know it".*

Knowledge is not only memory of facts but what you do with it. The complexity of human behaviour should not be underestimated. This is why educational objectives need active non-ambiguous verbs in order to achieve better communication between teachers and learners and to assess that complexity. This is why I suggest using the expression intellectual skill *(or competence) as meaning "a rational decision or act".* Sensomotor skill *(or competence) would replace "skills" as presently used and cover only "acts which require a neuromuscular coordination".* Interpersonal communication skill *(or competence) would replace "attitude(s)" and be limited to "verbal and non-verbal relation between persons".*

As the level of validity of assessment of learners' competencies is linked to the clarity of learning objectives, it is hoped that the above suggestions will raise the overall level of validity of the evaluation system. This is why it is important that everybody understands, in the same manner, the meaning of a learning objective. It will help learners to focus their learning efforts on the right target. It will help teachers to ensure the relevance to health needs of their teaching and the validity of assessment instruments. In both cases it will be beneficial to the health of the population.

KEYWORDS *Attitudes, knowledge, intellectual skill, interpersonal communication skill, sensomotor skill, validity*

Author for correspondence: J-J. Guilbert, MD, PhD (Educ), Consultant, Education of Health Personnel, 15 Avenue du Mail, CH-1205 Geneva, Switzerland. Tel: +41 22 809 82 15. Fax: +41 22 809 82 99. E-mail: guilbert.J-J@hcuge.ch

Education for Health ISSN 1357–6283 print/ISSN 1469–5804 online
http://www.tandf.co.uk/journals
DOI: 10.1080/135762802100001268 8

Introduction

The three words *knowledge*, *skills* and *attitudes* (KSA) are frequently used in the normal language of health personnel when discussing educational issues. It seems that their meaning is taken for granted and that everybody understands their meaning the same way (Alexander *et al*., 1991).

Unfortunately, because of their inherent ambiguity, these three words require consensual definitions. I propose that they should be replaced by *intellectual*, *sensomotor* and *communication skills*.

The word *knowledge* would of course continue to be used, when defining a contributing learning objective, as meaning ''useful information to be memorised in order to perform a skill (or competence)''.[1]

Intellectual skill (or competence) is defined as ''a rational mental decision or act''.

Sensomotor skill (or competence) would replace *skills* as presently used and cover only ''acts which require a neuromuscular coordination''.

Interpersonal *communication skill* (or competence) would replace *attitude(s)* and be limited to ''verbal and non-verbal relation between persons''.

First Clarification Attempt: Ralph W. Tyler (1949)

Tyler proposed a ''learner-centred approach'' with learning objectives that: ''should be a statement of changes to take place in students''. He specified ''thinking and feeling as well as overt action''. ''Much time should be devoted to the setting up and formulation of objectives because they are the most critical criteria for guiding all the other activities of the curriculum maker.'' He announced the relation of learning objectives with the assessment process: ''One can define an objective with sufficient clarity if he can describe the kind of behavior the student is expected to acquire so that one could recognize such behavior if he saw it''.[2]

He insisted on the need for *clarity*: ''Each of the terms used should have meaning so that they do not represent vague generalities which have no concrete significance''.

Dear Reader, as Robert F. Mager would say: ''If you are not interested in this need for clarity you have just finished reading this article''.

Second Clarification Attempt: Benjamin S. Bloom (1956)

The KSA trio has acquired its fame thanks to the seminal work of Ben Bloom. A classification of ''the student behaviours which represent the intended outcomes of the educational process'' (learning objectives) is to be of service to the assessment of learning. It serves ''to place (easily)

learning objectives in one of three major domains: *cognitive*, *affective and psychomotor* (but) although one could place an objective very readily in one of the three domains no objective in one domain (is) entirely devoid of some components of the two other domains''. Asking ''whether a human being ever does thinking without feeling, acting without thinking, etc'', Bloom states that ''each person responds as a 'whole being' whenever he does respond (...) Any classification (...) probably does some violence to the phenomenon as commonly observed in natural settings (...) Its value is likely to be (...) in the extent to which *evaluation evidence* will become available to appraise students'' progress toward the objectives''.

Bloom included under ''cognitive'' both ''remembering'' and ''solving some intellectual task'' but he recognised the ''very sharp divisions'' between the two. ''The *knowledge* of specific facts (can be) an end in its own right, while at a later point it becomes a tool for a more complex *objective* such as the ability to apply principles'' (which Bloom did call an ''intellectual skill'').[3]

The importance given by Bloom to ''increased communicability'' (between teachers and with students) was not perceived by some authors. For example, Katz and Snow (1980) dissect the three elements of the following example of a *task* ''to immunise a child'': ''how accurately the health worker decides on the dosage'',[4] ''how he performs the injection'',[5] and how he interacts with the child and parent''.[6] Katz is coherent with Bloom's view of the complexity of some learning objectives (professional tasks). But, unfortunately he decides that ''because of the variety of factors that make up human behaviour (...) it may *not be useful* to make arbitrary (simple) distinctions between Knowledge, Skills, and Attitudes''. This seems strange considering that the example he selected makes the KSA distinction quite possible (see notes 4–6). It communicates the presence of three (interrelated) professional actions and as recommended by Bloom when he made the following recommendation to ''give precise and usable definitions, and securing a consensus of the group which is to use them'' by the ''revision of definitions and repeated efforts at classification (in order to) arrive at a point where the classification procedures and the definitions of domains were communicable''.

Then Katz states that ''Performance assessment *must* address (...) performance as a whole, not just the elements of performance piece by piece or step by step''. While it is true that Bloom intended his classification to be of service to the assessment of learning, he never implied such a rule of ''all or nothing''. The question is: which of the three professional actions (or all) should be assessed and how?

Almost 15 years after Tyler and six years after Bloom, Mager (1962) still felt the need to repeat that an objective ''is meaningful to the extent it conveys to others a picture identical to the picture the writer had in mind''.

Bloom's *Handbook II* (1964)

Bloom felt that ''the affective domain represented a more difficult classification problem than the cognitive domain''. Affective objectives ''emphasize a feeling tone, an emotion, or a degree of acceptance or rejection''. Due to ''a lack of clarity in the statements of affective objectives'' Bloom found in the literature, under ''affective'', objectives concerned with ''interests, attitudes, appreciations, values and emotions''. It is interesting to note the absence of the term ''communication''. At the time college teachers were interested in developing positive ''attitudes'' to and ''interest'' for what they were teaching more than in helping learners to ''communicate''.

The concern of patients is to benefit from high quality relations when communicating with the health personnel.

In the long list of 134 examples given in Bloom's *Handbook II* only five have some relation with ''verbal and non-verbal relation between persons''.

Bloom mentions also the word ''values''. This word covers some demonstration of fairness, equity, sense of justice, integrity, honesty leading to trust, etc.[7] None of these values are specific to the health professions; these ''values'' should be expected from any (educated) citizen.[8]

The Fourth World Conference on Medical Education (Copenhagen, 1972)

Fifty-three speakers sang the same tune. Steve Abrahamson (Los Angeles) reminded the audience of the need to be explicit and clear, ''otherwise, different members of the institution's faculty and staff may have contradictory goals'' instead of ''a commonly accepted definition of the present and future roles of the physician (...) describing the professional tasks to be performed''.

John Anderson (London) added: ''Students demand that goals must be defined in ways that all the staff and all the students can understand what the objectives are and how to attain them through stated strategies''.

It Is Still "Fuzzland" in 2002!

The ''erosion'' mentioned by Bloom has continued. Efforts are limited ''to what can be explicitly evaluated for grading purposes and what can be taught easily''. The ''definition of the present and future roles of the physician'' recommended by Abrahamson is still in its infancy.[9]

And in spite of Anderson's advice there is still a lack of clarity in the statements of all categories of learning objectives as found in the literature.

Here are a few other examples showing lack of clarity.

J-P. Hubbard (1971), describing how he reoriented the National Board of Medical Examiners, said: ''The first step was to obtain a definition of clinical competence and skill (...) the next step was to determine how to test designated skills and behavior''.

Is measuring in the second step ''skills and behaviour'' something different from what is defined in the first step ''competence and skill''? In two lines three key words (''competence'', ''skill'' and ''behaviour'') are used without providing definitions.

Christine H. McGuire (1983), in a 300 word segment on ''professional competence'', uses the following words: ''performance'', ''skills'' and ''knowledge''[10] without any definition.

On ''assessing attitudes'' of students by identifying ''those who regularly *behave* in an acceptable manner'', she puts together ''*attitudes* toward patients'' (''informs patients of ...'') (which for me is a *communication skill*) and attitudes ''towards their work'' (''does not order costly, unnecessary tests'') (which for me is an *intellectual skill*).

Katz and Snow (1980),[11] concerned with the assessment of *performance*, refer to the ''practitioner's total *behaviour* in health care: *ability* to perform specified tasks, to take appropriate action, various kind (?) of *competence* (...) Too often only knowledge (as to how the task should be performed) is assessed. Other necessary *attributes* such as *interpersonal skills*, values and attitudes are seldom assessed''. Interpersonal skills do not seem to be in their category of attitudes!

Kern (Kern *et al*., 1998) provides other examples of confusing classification. He classifies ''To rank smoking cessation counselling as an important and effective intervention by primary care physicians'' as an example in the ''*affective*/attitude'' domain. ''To rank'' is for me an *intellectual skill*.

For Kern ''To demonstrate, in role play, a smoking cessation technique that incorporates the attached 8 steps'' is a ''*psychomotor*/skill or competence''. ''To negotiate a plan for smoking cessation'' is a ''*psychomotor*/behaviour or performance''. For me both are *communication skills*.

''To write a prescription'' is on occasion classified as a *sensomotor skill*. For me it is a professional *intellectual skill*. It is a sensory-motor skill for a child.

Charles Engel (2000), when talking about ''the level of competence'', expects students ''to acquire a growing familiarity with concepts and principles, to perfect *skills* and thus to extend the depth and breadth of their *competences*''. ''The demonstration of competence can be analysed in its component parts, not only the *cognitive* or thinking aspects, but also the *psychomotor* or manipulative[12] and *affective*[13] *as well as behavioural components*.'' ''As well as'' implies that Engel is adding a fourth domain to the three domains proposed by Bloom in 1956.

He favours the expression ''professional behaviour'' to ''attitudes''. ''Professional behaviour is *something* we can observe and judge against an agreed state of criteria (and that) we can help students to develop professional behaviour.'' For him[14] ''performance'' is ''*what* someone does'' and ''behaviour'' is ''*how* someone does it''.

For me ''professional behaviour'' covers all three domains of what I call ''professional competencies''. A competence (professional ability to carry out certain tasks) is ''a potential which is realised (and observable) at the moment of performance''.[15] Performance (of professional competencies) is for me ''HOW someone does WHAT'' and not only, according to Engel, ''WHAT someone does''.

I agree with Engel, who mentions his ''constant insistence (which) *embeds* behaviour as an *integral aspect* of medical practice''. This is why I prefer (as ''practice'' corresponds to ''performance'') to *integrate* the WHAT and the HOW. For me Engel's ''HOW'' is already included in his sentence ''something we can observe and judge against an agreed state of criteria''. The HOW is defined by the criteria (acceptable level of performance).

I see no advantage to add a fourth domain (behaviour) to the historical Bloomerian three domains. A research conducted in 1998 by the Italian Nursing Federation[16] showed that it is possible and useful to categorise the professional profile of nurses in the three Bloomerian domains.

Conclusion

The above examples demonstrate that many keywords are given different meanings. Ambiguity is a common handicap to efficient communication. In the design of a curriculum the quality of the definition of clear learning objectives plays a fundamental role; otherwise, learners and teachers encounter operational difficulties.

The complexity of human behaviour should not be underestimated. Educational objectives need active non-ambiguous verbs in order to facilitate communication between teachers and learners and to assess that complexity. Knowledge is not only memory of facts but what you do with it.

This is why I suggest using the expression *intellectual skill* (or competence) as meaning ''a rational decision or act''. *Sensomotor skill* (or competence) would replace *skills* as presently used and cover only ''acts which require a neuromuscular coordination''. *Interpersonal communication skill* (or competence) would replace *attitude(s)* and be limited to ''verbal and non-verbal relation between persons''.

I hope that these suggestions will raise the overall level of validity of the evaluation system.

Notes

1. Ton de Jong, AREA conference, Atlanta (USA) 1993, has identified 60 modifying adjectives related to the word ''knowledge''.
2. English spelling shall be used in this paper except, if needed, in direct quotes.
3. Christine McGuire proposed later (1963) an adaptation of Bloom's classification and I proposed in 1974 (*WHO educational handbook*) a three level classification: recall of facts, interpretation of data, and problem solving.
4. Intellectual skill.
5. Sensomotor skill.
6. Interpersonal communication skill.
7. Refer to *WHO educational handbook for health personnel*, Offset Pub. No. 35. Geneva: WHO (2000), p. 167.
8. Thus remains the difficult problem of a selection process able to identify applicants respecting and demonstrating consistently these values.
9. Metz, J.C.M. *et al.* (1994); *Swiss catalogue of learning objectives for undergraduate medical training*. Bern: Joint Commission of the Swiss Medical Schools (2001).
10. Abrahamson defines it: ''acquisition and retention of information'' (personal communication, 7 November 2000).
11. *Op. cit.*
12. This expression is found in Bloom (1956).
13. He exemplifies the ''affective domain'' as ''observing, hearing, feeling and drawing conclusions''. The first three words refer to ''senses'' and not ''observable''. ''To draw conclusions'' is in the ''intellectual domain'' and observable.
14. Personal communication (5 October 2000).
15. In the glossary of *WHO educational handbook for health personnel, op. cit.*
16. Linee guida per un progetto di formazione infirmieristica, Federazione Nazionale Collegi IPASVI, Roma, 1998.

References

ALEXANDER, P.A. *et al.* (1991). Coming to terms: how researchers talk about knowledge. *Review for Educational Research*, *61*, 3.

BLOOM, B.S. (1956). *Taxonomy of the educational objectives. Handbook 1: cognitive domain*. New York: David McKay.

BLOOM, B.S. (1964). *Taxonomy of educational objectives. Handbook II: affective domain*. New York: David McKay.

ENGEL, C. (2000). Assessment of students' progress and achievement. In: H. Schmidt, J. Magzoub, G. Feletti, Z. Nooman, & P. Vluggen. (Eds), *Handbook of community-based education: theory and practices*. Maastricht, The Netherlands: Network Publications.

HUBBARD, J.P. (1971). *Measuring medical education*. Philadelphia: Lea & Febiger.

KATZ, F.M. & SNOW, R. (1980). Assessing health worker performance. In: *World Health Organisation PHP*, No. 72. Geneva: World Health Organisation.

KERN, E. *et al*. (1998) *Curriculum development for medical education*. Baltimore: Johns Hopkins University Press.

MAGER, R.F. (1962) *Preparing instructional objectives*. Palo Alto: Fearon.

MCGUIRE, C. (1983). *Handbook of health professions education*. San Francisco: Jossey – Bass.

METZ, J.C.M. *et al*. (1994). *Blueprint 1994: training of doctors in The Netherlands*. The Netherlands: UPO, University of Nijmegen, Nijmegen.

TYLER, R.W. (1949). *Basic principles of curriculum and instruction*. Chicago: University of Chicago Press.