

TAXONOMY OF EDUCATIONAL OBJECTIVES

MALAYSIAN EDITION

FOR DENTAL PROGRAMME

SECTION VIII

Taxonomy of Educational Objectives - Malaysian Edition for Dental Programme

Introduction

The Taxonomy of Educational Objectives is a classification of learning objectives or outcomes from simple to complex and concrete to abstract with the assumption that the lower level is prerequisite to achievement of the higher level. This taxonomy is initially focused on the cognitive domain but later expanded to encompass the affective and psychomotor domains. The aims are to assist teachers to formulate clear learning outcomes, develop appropriate teaching-learning activities and prepare supporting instructional materials. It also to help teachers construct suitable assessment tools.

The Taxonomy of Educational Objectives was developed by Bloom and co-workers in 1950s and subsequently a handbook on cognitive domain was published to guide teachers in using this taxonomy (Bloom et al., 1956). The cognitive domain in this handbook is classified into 6 levels, namely knowledge, comprehension, application, analysis, synthesis and evaluation. This original taxonomy was revised in 2001 by Anderson and Krathwohl by maintaining the six categories but reclassified into remember, understand, apply, analyse, evaluate and create so as to be consistent with current educational practices (Anderson & Krathwohl, 2001). Taking into cognisance the above development, the document on the Taxonomy of Educational Objectives – The Malaysian Edition for Dental Programme, adopts the reclassification of the cognitive domains. The psychomotor and affective domains remain unchanged.

Application

This document on Taxonomy of Educational Objectives – The Malaysian Edition for Dental Programme provides a guide for all lecturers to formulate learning outcomes for all courses in the dental curricula of educational programmes that are under the auspices of the Malaysian Dental Council.

It is applicable to all dental programmes in this country at diploma, undergraduate and post-graduate levels.

It also takes into consideration the good practices in student assessment as advocated by MQA (MQA, 2023).

The assessment methods must be appropriate and aligned to the level of taxonomy within the domains of cognitive or psychomotor or affective domains to ensure that dental students achieve the stipulated level in the competencies of the new dental graduates at diploma, undergraduate and postgraduate levels.

The selection of choice of verbs to be used pertains specifically to the construction of learning outcomes rather than the development of assessment questions.

This guide provides the scope in its application and an outline of the three domains that are tabulated to include the description, teaching-learning activities and the choice of verbs. A summary of the verbs used for the categories of the domains are also included and presented as taxonomy wheel to facilitate quick reference in choosing appropriate verbs.

Domains

The process of learning is usually classified into three domains namely cognitive, psychomotor and affective. These three domains are commonly known as knowledge, skills and attitude.

- The cognitive domain is concerned with mental processes in acquiring knowledge and developing intellectual skills. The cognitive domain for this document is based on Anderson and Krathwohl (2001). The 6 categories enumerated from simple to complex are “remember, understand, apply, analyse, evaluate and create”. This new taxonomy reflects a more active form of thinking and consistent with current learning practices.
- The psychomotor domain involves use of motor skills that require physical movement and coordination. The psychomotor domain in this document is based on Simpson’s (1972). The seven major categories are listed from the simplest behaviour to the most complex are “perception, set, guided response, complex overt response, adaptation and origination.”
- The affective domain refers to how learners deal with their emotions that reflect their feelings, values and attitudes. This document adopts the domains as advocated by Krathwohl, Bloom, Masia (1973). The five affective categories are listed from the simplest behaviour to the most complex. It includes “receiving phenomena, responding to phenomena, valuing, organising values and internalising values.”

COGNITIVE

Level		Description	Activities	Choices of verbs to be used
REMEMBER	C1	Retrieving relevant knowledge from long-term memory	1.1 Recognising 1.2 Recalling	Choose, Define, Describe, Enumerate, Find, Give, Identify, Label, List, Locate, Name, Omit, Recall, Relate, Select, State
UNDERSTAND	C2	Determining the meaning of instructional messages, including oral, written, and graphic communication	2.1 Interpreting 2.2 Exemplifying 2.3 Classifying 2.4 Summarizing 2.5 Inferring 2.6 Comparing 2.7 Explaining	Classify, Compare, Contrast, Comprehend, Demonstrate, Describe, Distinguish, Discuss, Explain, Extend, Identify, Indicate, Illustrate, Infer, Interpret, Outline, Relate, Rephrase, Show, Summarise, Translate, Review, Report
APPLY	C3	Carrying out or using a procedure in a given situation	3.1 Executing 3.2 Implementing	Apply, Arrange, Build, Classify, Choose, Construct, Demonstrate, Design, Develop, Establish, Execute, Identify, Illustrate, Implement, Interview, Model, Modify, Organise, Plan, Produce, Select, Solve, Show, Prepare, Relate, Use, Utilise
ANALYSE	C4	Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure	4.1 Differentiating 4.2 Organising 4.3 Attributing	Analyse, Appraise, Categorise, Classify, Compare, Conclude, Contrast, Design, Differentiate, Discriminate, Dissect, Distinguish, Divide, Examine, Infer, Inspect,

		or purpose		Interpret, Investigate, Justify, List, Outline, Predict, Prescribe, Relate, Simplify, Specify, Suggest, Summarise
EVALUATE	C5	Making judgements based on criteria and standards	5.1 Checking 5.2 Critiquing	Appraise, Assess, Choose, Compare, Conclude, Consider, Critique, Decide, Deduce, Defend, Determine, Discuss, Disprove, Estimate, Evaluate, Exclude, Explain, Interpret, Judge, Justify, Mark, Measure, Prioritise, Prove, Rate, Recommend, Relate, Select, Support, Summarise, Value, Validate, Weigh
CREATE	C6	Putting elements together to form a novel, coherent, whole or make an original product	6.1 Generating 6.2 Planning 6.3 Producing	Adapt, Arrange, Assemble, Build Change, Choose, Combine, Compile, Compose, Construct, Create, Devise, Design, Develop, Elaborate, Estimate Formulate, Fabricate, Generate, Hypothesise, Integrate, Innovate Improve, Invent, Maximise Minimise, Modify, Organise Originate, Plan, Predict, Propose, Produce, Revise, Solve

PSYCHOMOTOR

Level		Description	Choices of verbs to be used
PERCEPTION	P1	The ability to use sensory cues to guide motor activities	Choose, Describe, Detect Differentiate, Distinguish, Identify, Isolate, Select, Relate
SET	P2	The readiness to act	Begin, Display, Explain, Proceed, React, State, Show Volunteer
GUIDED RESPONSE	P3	Observe and imitate action or activity	Copy, Follow, Trace, React, Respond, Reproduce
MECHANISM	P4	Perform activity or task with some confidence and proficiency	Assemble, Calibrate, Construct, Demonstrate, Dismantle, Display, Fasten, Fix, Grind, Heat, Manipulate, Measure, Mend, Mix, Organize, Sketch
COMPLEX OVERT RESPONSE	P5	Perform activity or task proficiently	Assemble, Calibrate, Construct, Build, Diagnose, Display, Demonstrate, Dismantle, Integrate, Mend, Fasten, Formulate, Manipulate, Mix, Measure, Organize, Perform, Sketch,
ADAPTATION	P6	Coordinate and modify activity or task to address new situations	Adapt, Alter, Change, Rearrange, Reorganize, Revise, Vary
ORIGINATION	P7	Create and execute new technique or task	Arrange, Build, Create, Combine Compose, Construct, Design, Initiate, Originate

AFFECTIVE

Level		Description	Choices of verbs to be used
RECEIVING PHENOMENA	A1	Willing to listen and experience	Ask, Choose, Describe, Give, Identify, Locate, Follow, Hold, Point to, Reply, Name, Select, Use
RESPONDING TO PHENOMENA	A2	Participate willingly	Aid, Answer, Assist, Comply, Conform, Discuss, Greet, Help, Perform, Practice, Present, Read, Report, Select, Tell, Write
VALUING	A3	Attach value and express opinion	Apply, Complete, Demonstrate, Differentiate, Explain, Follow, Form, Initiate, Invite, Join, Justify, Propose, Recognize, Report, Select, Share, Study, Work
ORGANISING VALUES	A4	Organise and develop personal value system	Adhere Alter, Arrange, Combine, Compare, Complete, Defend, Explain, Formulate, Generalize, Identify, Integrate Organize, Modify, Prepare, Relate, Synthesize
INTERNALIZING VALUES	A5	Adopt the value system into behaviour	Act, Discriminate, Display, Influence, Listen, Modify, Perform, Revise, Serve, Solve, Practice, Propose, Qualify, Question, Verify

Summary: Taxonomy Wheel

A summary of the Taxonomy of Educational Objectives - Malaysian Edition for Dental Programme is presented in form of Taxonomy wheel for the three domains of cognitive, psychomotor and affective. It is to provide a quick reference for those involved in formulating learning outcomes to choose appropriate verbs designed for effective of the students.







Conclusion

The taxonomy of educational objectives that was initiated by Blooms and his co-workers is used across many disciplines and educational levels. It is widely used because of common understanding about educational goals. However, there are changes made to the cognitive domains since the early days of the taxonomy of educational objectives. This document takes into consideration these changes so as to be relevant with the developments in educational processes

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