

VISUAL MAPPING FOR TEACHING AND ASSESSMENT

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Introduction

Despite the proliferation of organizations that either mandate or advise colleges and administrators about how to develop and implement Learning Objectives (LOs), there remain numerous, and often major impediments. The importance of determining, articulating and measuring the extent to which LOs are achieved is problematic, at many levels and for many stakeholders. This is particularly true for the Marketing discipline where the “knowledge” is often extremely situation specific (for instance, in a company) and there are few true “principles,” even though the word is in the title of many Marketing textbooks (See Exhibit 1 – Preamble).

“Visual Mapping” Approach for Developing Course Content and Assessing Course Learning Objectives

The unique characteristics of domain-knowledge in Marketing courses, combined with the other problematic issues characterizing course content creation and current assessment practices, highlight the need for an improved approach which can simultaneously target both the objectives of *teaching* and *assessment*. Toward this end we propose an approach we call “Visual Mapping” (VM) that can be used in two ways: first to help guide faculty in the process of course development (e.g. identifying, integrating, and structuring relevant pedagogic content), and second as a method for assessing course learning objectives. VM is a pedagogic approach that should be, and often is an aid to student learning. For instance, our Market Analysis case-based course employs such a visual map as an overall framework for the course (Exhibit 2) and a way to organize the case examples (Exhibit 3).

Our thesis is that VM can not only be used in the process of course development and teaching, but also that VM can then be “flipped” and used for course-level assessment. Such assessment is done by utilizing the “Visual Map” in a sequence of assessment steps, which we refer to as the *Recall*, *Mapping*, and *Application* framework (see Exhibit 4). We have found that this approach helps mitigate some of the previously noted problems. More specifically it is designed to engage those faculty most directly involved in teaching the course; it is more transparent regarding how specific LOs are developed, assessed, and scored; and it is more “intuitive” and easy to develop. The method capitalizes on the natural spatial mechanisms of the human brain. “Intuitive” means that the LOs will be based on, or closely grounded in actual course content and “chunked” according to a spatial representation (as explained in more detail below).

Description of and Rationale for the “Visual Mapping” Approach

This approach is grounded in the belief that LOs should be based upon the most important aspects of course content that a student should learn to demonstrate competency in that course area. Competency is composed of three dimensions: *recall*, *mapping* (e.g., chunking organization), and *application*. These three dimensions are highly relevant to assessment efforts because they relate to Bloom’s learning taxonomy (Krathwohl, Bloom and Masia, 1964). *Recall* is reflective of Bloom’s lowest level of learning, namely “Knowledge.” *Mapping* is a form of Organization and Integration similar to his second level of learning, “Comprehension,” which is reflected in the students abilities to demonstrate that they understand information, grasp meaning, to order, group, and infer causes, to summarize, describe, and predict consequences; and *Application* is similar to several of his higher levels of learning, particularly Bloom’s references to:

- “Application” (ex. use information, methods, concepts, theories in new situations; solve problems using required skills or knowledge, to examine, modify, relate);
- “Analysis” (ex. seeing patterns, organizing parts, identifying components, analyzing, explaining, comparing, inferring);
- “Synthesis” (ex. use old ideas to create new ones, generalize from given facts, relate knowledge from several areas, predict, draw conclusions, rearrange, substitute, plan, create, design, invent, formulate); and
- “Evaluation” (ex. compare and discriminate between ideas, assess value of theories, presentations, make argument-based choices, verify evidence, assess, test, measure, recommend, discriminate, support, conclude, compare, summarize)

<http://www.ion.uillinois.edu/resources/tutorials/assessment/bloomtaxonomy.asp>).

The central idea of the “VM” approach is that the LOs for a course are grounded in those major aspects about which the student is expected to gain competence, e.g. be able to recall, organize and apply. Such aspects may manifest in various forms, particularly for example, in underlying theories, models, frameworks, or paradigms that define, reflect, reveal, and certainly apply the most essential course material.

It is important to understand that virtually any course could be “organized” and taught around one overarching Visual Map and then broken down into sub-maps as the course progresses. [For example, even though there are multiple, competing theories of human learning that might be covered in a Consumer Behavior course—say cognitive vs. behavioral learning --- both could be presented within the same single overarching Visual Map as key “internal variables” that can influence a consumer’s decision making process. Different parts of the Visual Map could be taught as separate modules (each with its own relevant teaching materials, including textbook chapters, reading, homework exercises, field projects, etc.). The Visual Map would be presented at the course outset, as an overarching visual about the key content topic-areas that the course would cover. The course could be modularized by topic area, largely following the flow of the key variables that were defined in the overarching Visual Map. To enhance student learning, it is important for instructors to repeatedly show and allude back to the overarching Visual Map (whatever its form—be it a graphic model, a schematic, or even a diagrammatic equation, etc.). Alluding to the Visual Map is also especially important at those points in the course when the topic is switching from one key component of the map to another (for example, when shifting gears from a module on pricing to a module on promotion in the Principles course, or from a module on motivation to one on attitudes in a CB course). The benefit and power of using such overarching Visual Maps for teaching is well supported (McIntyre and Munson, JME 2008). One informative study from the medical education literature (Novak, Mandin, Wilcox, and McLaughlin, 2006) found that “students who develop expert-type knowledge structures . . . use a conceptual framework in so doing, were more likely to keep (that) knowledge . . . than those who did not use a conceptual framework” (p. 6).

Visual Maps at All Levels: Program, Course, or Concept

Visual Maps have broad applicability for both pedagogy and assessment; they are certainly not confined to just the course level. For instance, Exhibits 5, 6, and 7 show VMs in use at the Program, Course and Concept level respectively; and Exhibit 8 shows a VM of Bloom’s Assessment Taxonomy.

In summary, Visual Maps can be considered not only for the purposes of pedagogy, as is already widely practiced, but also as a tool for assessment at the program, course, or concept level.

References

- Hawkins, D. I. & Mothersbaugh, D. L. (2013). *Consumer Behavior: Building Marketing Strategy*, 12 ed., New York: McGraw Hill Irwin.
- Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). *Taxonomy of educational objectives: The classification of educational goals. Handbook II: The Affective Domain*. New York: David McKay Company.
- McIntyre, S. H., & Munson, J. M. (2008). Exploring cramming: Student behaviors, beliefs, and learning retention in the principles of marketing course. *Journal of Marketing Education*, 30(3), 226-243.
- Novak, K., Mandin, H., Wilcox, E., & McLaughlin, K. (2006). Using a conceptual framework during learning attenuates the loss of expert-type knowledge structure. *BMC Medical Education*, 6(37), 1-8.

Exhibit 1: What Does It Mean to “Know” Marketing

Preamble (*The Uniqueness of Marketing Specific Domain Knowledge*)

It is very instructive to consider how Procter & Gamble, the pinnacle of marketing achievement and the inventor of the brand management system, handles brand team assignments.

At P&G, if a brand assistant is assigned to the Scrub & Soft brand, that person is going to learn a tremendous amount about that single brand. The brand assistant is going to know how Scrub & Soft is doing in each metro area around the country, who the category competitors are, what the segments of consumers are, what advertising has worked best, what types of promotions have been most profitable, and much, much more. It is almost as if the brand assistant is getting a Ph.D. in just Scrub & Soft. So, based on this enormous knowledge base, it would seem that the brand assistant would stay with Scrub & Soft and be promoted eventually to Assistant Brand Manager, and ultimately to Brand Manager of this same brand.

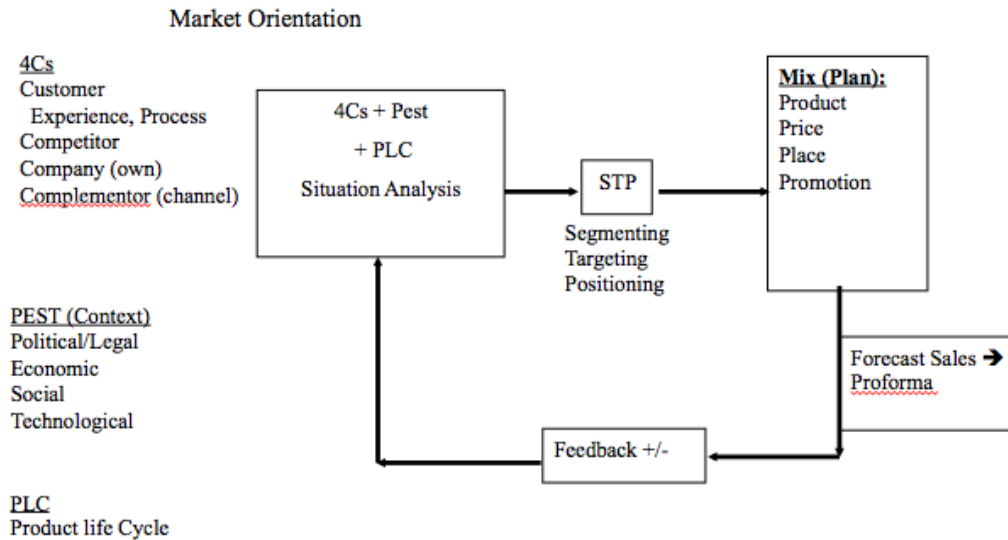
But no!! P&G instead rotates brand team members from one brand to another on what is sometimes termed the “brand merry-go-round”. The fact of this rotation tells us that P&G values the “process of analyzing the situation” more than it does specific knowledge about the brand and its competitors.

The fact of the brand-marry-go-round tells us that Marketing is more like engineering than basic science - - it is an application area where frameworks and processes are applied.

Exhibit 2: Course-level Assessment

MARKETING MANAGEMENT PROGRAM MAP

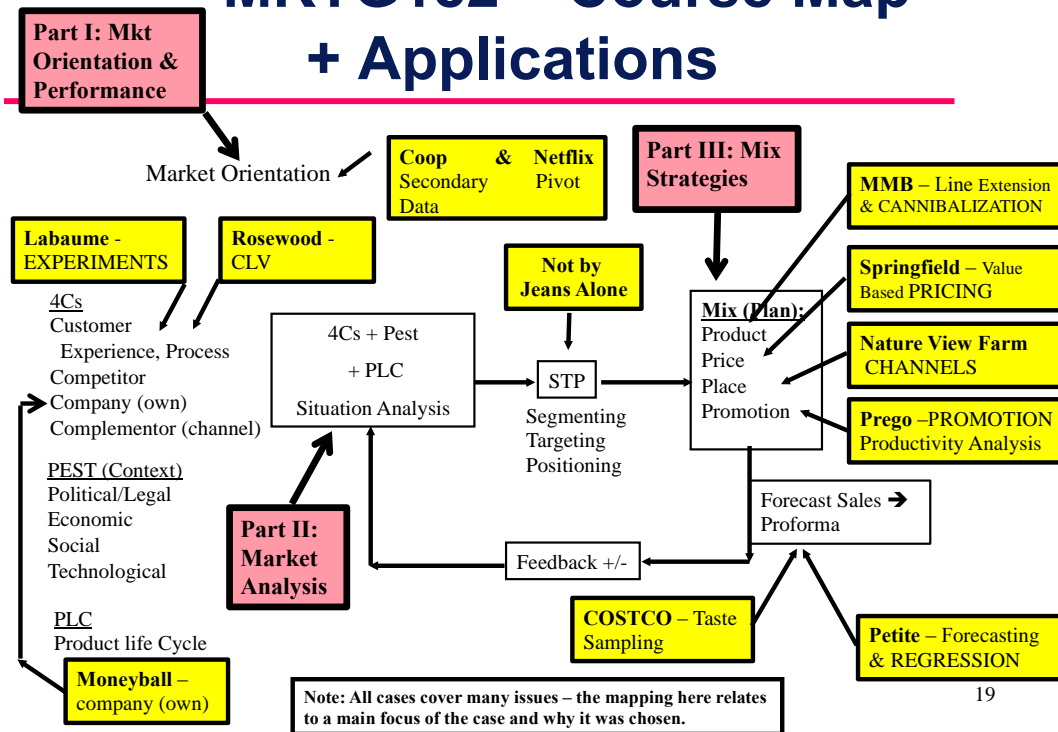
Marketing Management Map



This is an example of a Visual Map used in a Marketing Management course called “Market Analysis” and it represents the essence of a Marketing Plan in terms of a spatial diagram that students find easy to remember. This is then used as a Recall task for students. Subsequently, it is presented as a blank diagram, e.g., without the terms included, and the Mapping task is to put the terms where they belong. A final question asks for Applications from the course for each of the terms. These applications are typically marketing cases that have been studied and linked to the different terms in the diagram.

Exhibit 3: Course-level Application Assessment

MKTG182 – Course Map + Applications



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This is an example of the Visual Map for a course along with the Applications used in the course. Students are expected to provide and explain such applications. This relates to the highest level of assessment on the Bloom Taxonomy of learning objectives and thus learning outcomes. Students are also expected to provide examples from a newly provided case study in terms of mapping it onto the course framework as above.

Exhibit 4: Visual Mapping for Course Assessment

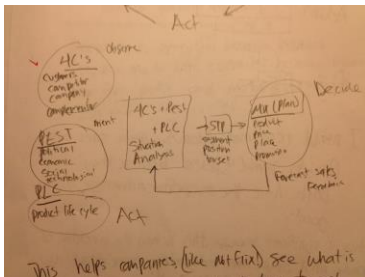
Based on the pre-amble (Exhibit 1), plus the other problems identified with developing course content and assessing student learning outcomes, we have developed the Visual Mapping (VM) approach. It allows for simultaneous achievement of both pedagogic development and assessment objectives. In the process of pedagogic development it allows faculty to identify, structure and “chunk” course-relevant content into a more coherent body. This content can then be “flipped” or dovetailed with the *assessment* part of the VM Approach, as embodied in the **Recall, Mapping and Application** paradigm for assessing marketing student competence-in-the-course and marketing-knowledge (as shown in Steps 1-3 below). These are skills, habits of mind, and knowledge that most differentiate students in the Marketing discipline from their peers in other departments.

Step1 → Recall – Starting with a blank sheet, marketing students should be able to recall and describe important structures and processes that constitute the foundation of problem-solving in the marketing domain of business.

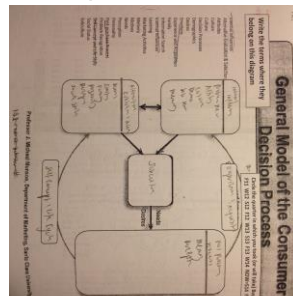
Step2 → Mapping – Starting with a structural diagram (e.g., a framework without words) of the marketing domain, marketing students should be able to map a list of key concepts and terms into the diagram where they appropriately pertain.

Step3 → Application – Starting with a structural diagram and key concepts and terms, students should be able to relate, describe and execute applications of those concepts and terms.

RECALL: Draw the course framework



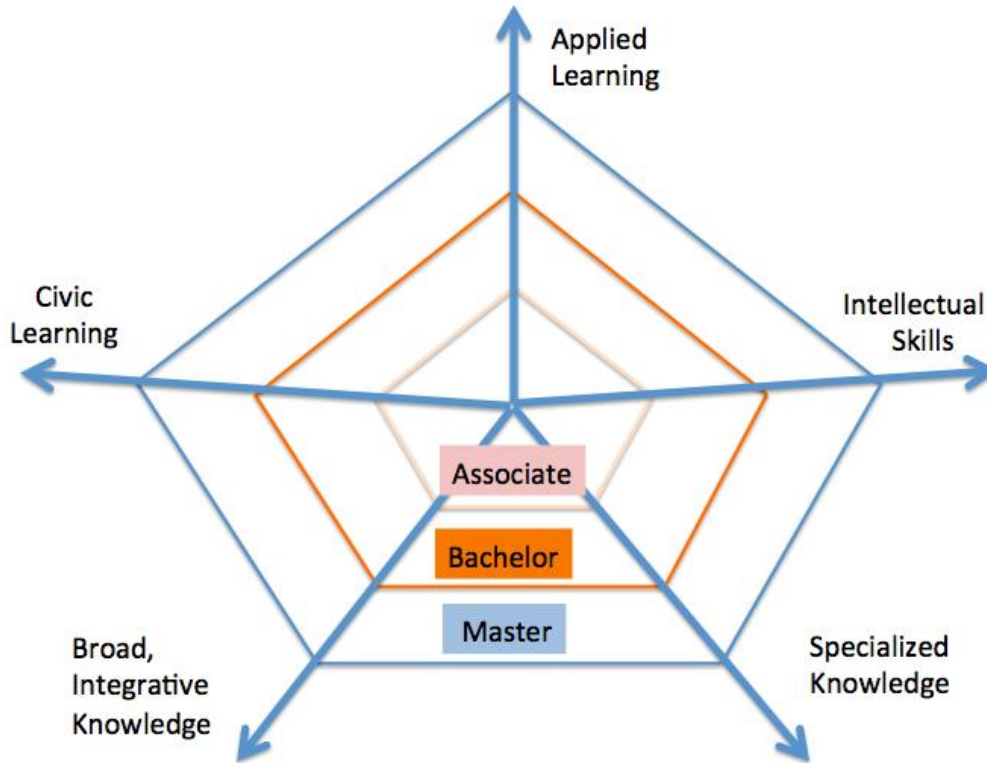
MAPPING: Map the concepts onto framework



APPLICATION: produce & explain applications

Marketing Plan Area	Application	Application: Why is this the best application for the company?	Analysis, Merits or Limitations
Market Orientation	X		
Product	X		
Price	X		
Promotion	X		
Place	X		
Customer Segments	X		
Competitive Advantage	X		
Company's Core Values	X		
Company's Culture	X		
Company's Reputation	X		
Company's Financial Performance	X		
Company's Social Performance	X		
Company's Environmental Performance	X		
Company's Governance	X		
Company's Leadership	X		
Company's Innovation	X		
Company's Sustainability	X		
Company's Resilience	X		
Company's Agility	X		
Company's Flexibility	X		
Company's Scalability	X		
Company's Adaptability	X		
Company's Resilience	X		
Company's Agility	X		
Company's Flexibility	X		
Company's Scalability	X		
Company's Adaptability	X		

Exhibit 5: Program-Level Assessment

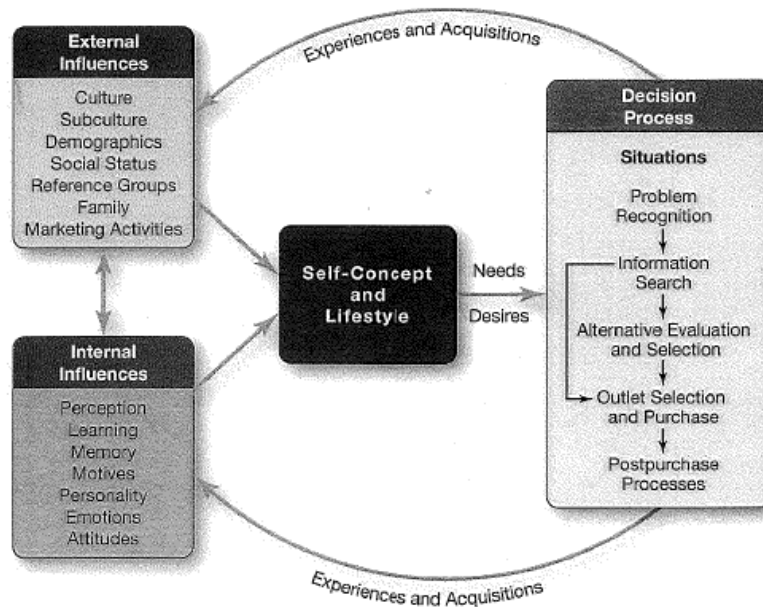


This is an example of a Visual Map being used as a framework for Program-level assessment at the Associate, Bachelor and Master Program levels respectively. It is called the Degree Qualifications Proficiency (DQP) framework. Clearly it is a “Visual-Map-for-Assessment” and is backed by the National Institute of Learning Objectives Assessment which has sponsored it as part of a \$1,000,000 grant from the Lumina Foundation. This is an example of how helpful a Visual Map can be as the overarching framework for assessment.

Exhibit 6: MKTG183 – Consumer Behavior

Course Level Visual Map and Assessment Framework

General Model of the Consumer Decision Process



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This is an example of a Consumer Behavior course cast as a Visual Map based on the model of Hawkins and Mothersbaugh (2013). We have found that it helps students to easily see and remember the overall framework of the course. It is also used as an assessment tool for Recall, Mapping and Application on the final exam in the course.

Exhibit 7: Concept-Level Assessment

ON-THE-PAGE FACTORS

These elements are in the direct control of the publisher

CONTENT	
Cq QUALITY	Are pages well written & have substantial quality content?
Cr RESEARCH	Have you researched the keywords people may use to find your content?
Cw WORDS	Do pages use words & phrases you hope they'll be found for?
Ce ENGAGE	Do visitors spend time reading or "bounce" away quickly?
Cf FRESH	Are pages fresh & about "hot" topics?
Vt THIN	Is content "thin" or "shallow" & lacking substance?
Va ADS	Is your content ad-heavy, especially "above the fold"?
HTML	
Ht TITLES	Do HTML title tags contain keywords relevant to page topics?
Hd DESCRIPTION	Do meta description tags describe what pages are about?
Hh HEADERS	Do headlines & subheads use header tags with relevant keywords?
Hs STRUCTURE	Do pages use structured data to enhance listings?
Vs STUFFING	Do you excessively use words you want pages to be found for?
Vh HIDDEN	Do colors or design "hide" words you want pages to be found for?
ARCHITECTURE	
Ac CRAWL	Can search engines easily "crawl" pages on site?
Ad DUPLICATE	Does site manage duplicate content issues well?
As SPEED	Does site load quickly?
Au URLS	Are URLs short & contain meaningful keywords to page topics?
Am MOBILE	Does your site work well for mobile visitors, on smartphones and tablets?
Vc CLOAKING	Do you show search engines different pages than humans?

THE PERIODIC TABLE OF SEO SUCCESS FACTORS

Search engine optimization – SEO – seems like alchemy to the uninitiated. But there's a science to it. Below are some important "ranking factors" and best practices that can lead to success with both search engines and searchers.

ON-THE-PAGE SEO			OFF-THE-PAGE SEO			
CONTENT	HTML	ARCHITECTURE	LINKS	TRUST	SOCIAL	PERSONAL
Cq ⁺³ Quality	Ht ⁺³ Titles	Ac ⁺³ Crawl	Lq ⁺³ Quality	Ta ⁺³ Authority	Sr ⁺² Reputation	Pc ⁺³ Country
Cr ⁺³ Research	Hd ⁺² Description	Ad ⁺² Duplicate	Lt ⁺² Text	Th ⁺¹ History	Ss ⁺¹ Shares	Pl ⁺³ Locality
Cw ⁺² Words	Hh ⁺¹ Headers	As ⁺¹ Speed	Ln ⁺¹ Numbers	Ti ⁺¹ Identity		Ph ⁺³ History
Ce ⁺² Engage	Hs ⁺¹ Structure	Au ⁺¹ URLs	Vp ⁻³ Paid	Vd ⁻¹ Piracy		Ps ⁺² Social
Cf ⁺² Fresh	Vs ⁻¹ Stuffing	Am ⁺¹ Mobile	VI ⁻² Spam			
Vt ⁻² Thin	Vh ⁻¹ Hidden	Vc ⁻³ Cloaking				
Va ⁻¹ Ads						

FACTORS WORK TOGETHER

All factors on the table are important, but those marked 3 carry more weight than 1 or 2. No single factor guarantees top rankings or success, but having several favorable ones increases the odds. Negative "violation" factors shown in red harm your chances.

OFF-THE-PAGE FACTORS

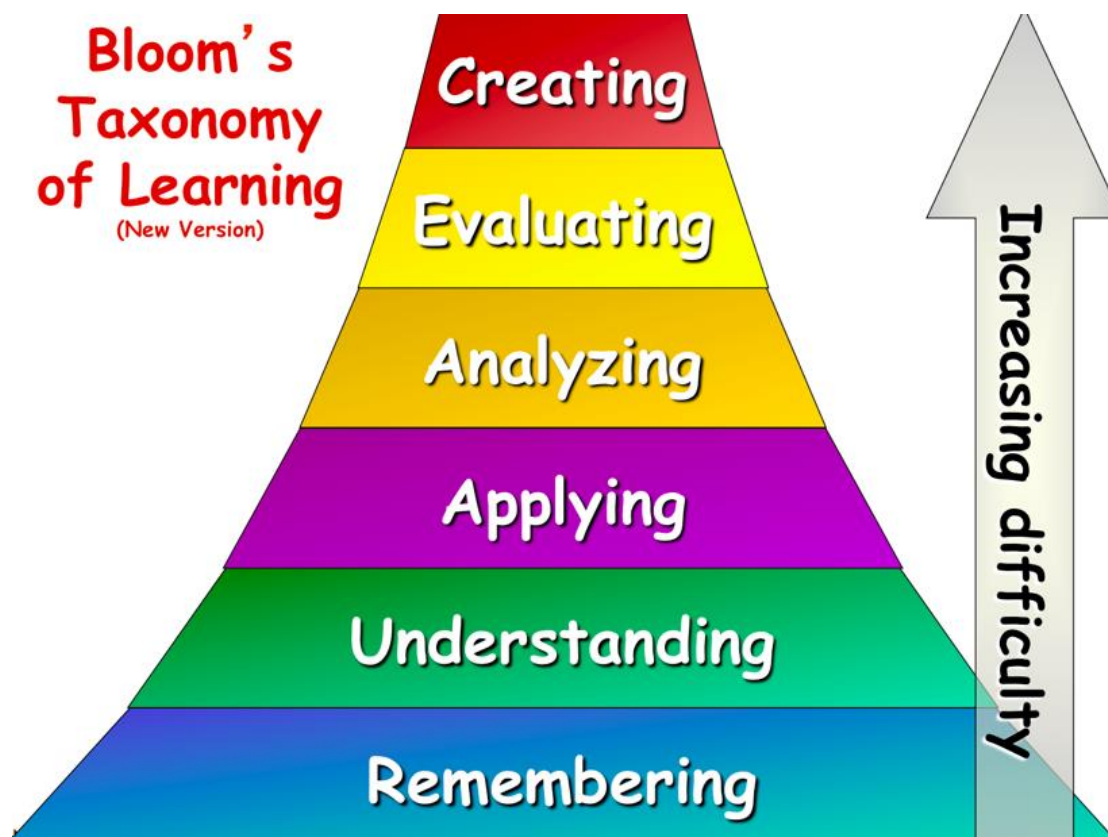
Elements influenced by readers, visitors & other publishers

LINKS	
Lq QUALITY	Are links from trusted, quality or respected web sites?
Lt TEXT	Do links pointing at pages use words you hope they'll be found for?
Ln NUMBER	Do many links point at your web pages?
Vp PAID	Have you purchased links in hopes of better rankings?
Vl SPAM	Have you created many links by spamming blogs, forums or other places?
TRUST	
Ta AUTHORITY	Do links, shares & other factors make site a trusted authority?
Th HISTORY	Has site or its domain been around a long time, operating in same way?
Ti IDENTITY	Does site use means to verify its identity & that of authors?
Vd PIRACY	Has site been flagged for hosting pirated content?
SOCIAL	
Sr REPUTATION	Do those respected on social networks share your content?
Ss SHARES	Do many share your content on social networks?
PERSONAL	
Pc COUNTRY	What country is someone located in?
Pl LOCALITY	What city or local area is someone located in?
Ph HISTORY	Has someone regularly visited your site or socially favored it?
Ps SOCIAL	Have your friends socially favored the site?

Written By: [SEARCH ENGINE LEADS](#) Design By: [COLUMN FIVE](#)
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This Visual Map is at the concept level and does a good job of breaking down the many aspects of Search Engine Optimization (SEO), into a great number of components, but that are then easy to learn and recall because of the spatial arrangement and nomenclature involved along with the students' prior familiarity with the periodic table from freshman chemistry. Even the color scheme of the original graphic conveys a lot of meaning. Also, as noted, the "factors work together" section (lower center of this **VM**) also enhances the analogy to the chemistry periodic table.

Exhibit 8: Bloomberg's Taxonomy of Learning Objectives



This Visual Map shows that even Bloom's Taxonomy itself is often presented as a Visual Map. This taxonomy is at the heart of stating course objectives and guides the intent of assessment at different levels in terms of increasing degree of attainment or difficulty.