

Bloom's Taxonomy

Applications to Snowsports
Instruction

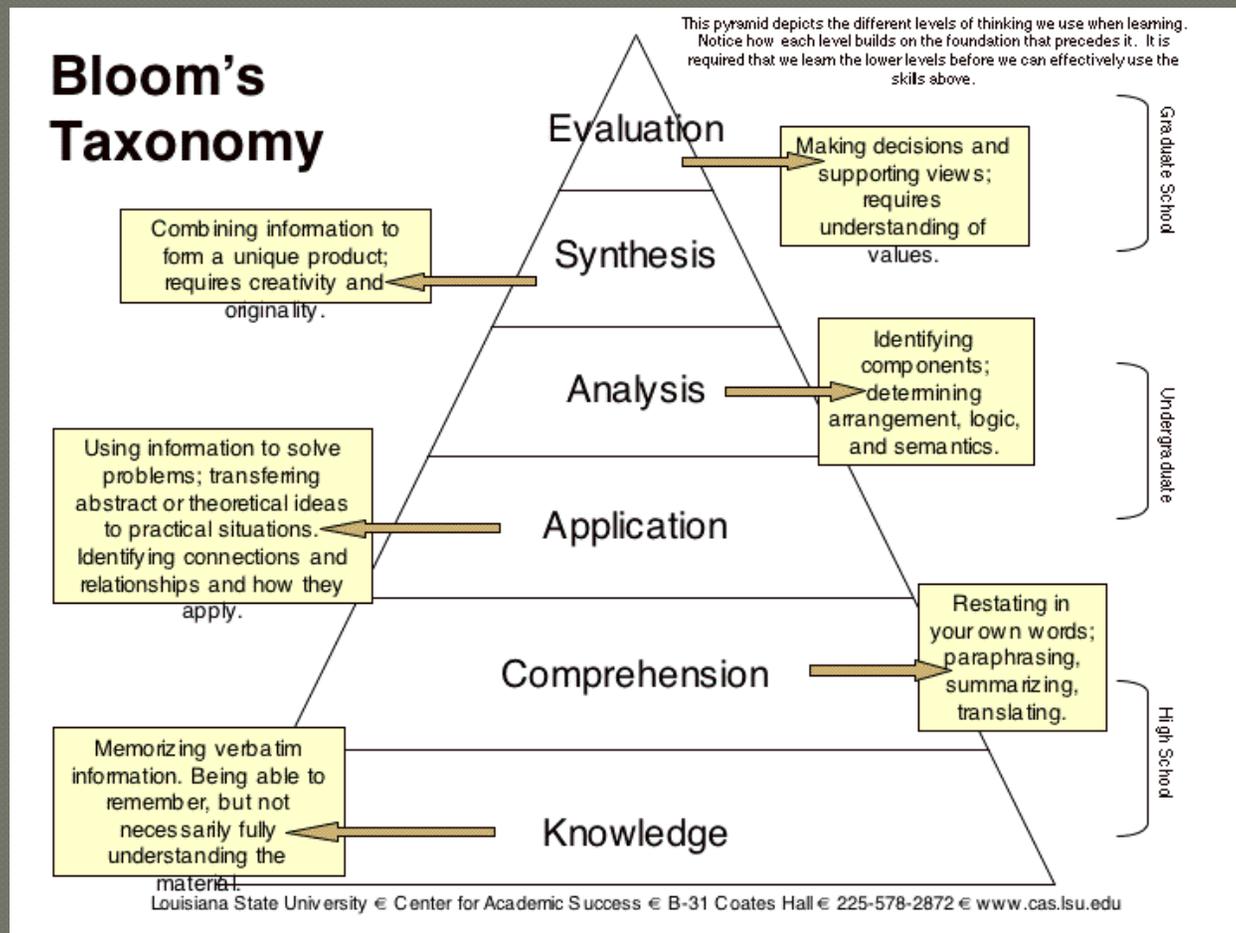
By Kim Petram

History

● Benjamin Bloom:

- Professor: University of Chicago
- Questioned how to objectively prove a student has mastered a particular set of knowledge
- Research outcomes: developed criteria to use in understanding learning domains. Identification of 3 processes that define learning outcomes:
 - **CAP: Cognitive, Affective and Psycho-Motor**
- Lead author: establishment of a criteria set to measure levels of cognitive function and comprehension.....

Bloom's Taxonomy



Usage

- Organized by cognitive complexity
- How to measure higher level thinking skills
- Dependent on mastery of information at each level before the next level of competency is pursued
 - A format to apply objective standards with clear outcome behaviors to measure success of met standard

Time is the Variable

- ◎ Everyone can achieve goals:
 - Everyone is capable of meeting objectives
 - Everyone is capable of reaching “evaluation” stage
 - The instructor’s task is to design instruction to meet the goals of understanding
 - TIME is the variable to reach individual goals of learning versus just testing and utilizing a comparative system

Application



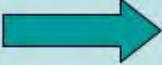
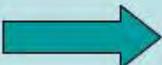
Tiered System of Classification w/ 6 Cognitive Levels of Complexity

- Knowledge: the recall of data and information; natural urge to recall previously learned material.
- Comprehension: ability to grasp meaning; explain or restate ideas; understand basic information and the ability to then translate, interpret or extrapolate.
- Application: ability to use learned material in new situations or the unprompted use of an abstraction; use information, ideas and skills to solve problems and apply.
- Analysis: ability to separate information or material into component parts and show relationship between parts; break apart information; distinguish between fact and inference.
- Synthesis: ability to put together separate ideas to form new understanding or establish a new relationship; place ideas and knowledge in a new form; possibly create new meaning by structuring or patterning diverse elements.
- Evaluation: ability to judge the value or worth of material and ideas against established criteria; making appropriate judgments based upon reviewing and asserting evidence, facts and ideas.

2001 Revision

Original Domain

New Domain

• Evaluation		• Creating
• Synthesis		• Evaluating
• Analysis		• Analyzing
• Application		• Applying
• Comprehension		• Understanding
• Knowledge		• Remembering

2001 Adaptation and Refinement

Remember (Knowledge Level)

Recall or recognize terms, definitions, facts, ideas, materials, patterns, sequences, methods, principles.
Key Verbs: name, list, state, describe, recall, label, retrieve, recognize.

Understand (Comprehension Level)

Read and understand descriptions, communications, reports, tables, diagrams, directions, regulations.
Key Verbs: paraphrase, identify, explain, translate, interpret, interpretation, classify.

Apply (Application Level)

Know when and how to use ideas, procedures, methods, formulas, principles, theories.
Key Verbs: execute, compute, demonstrate, modify, discover, predict, show, solve, implement.

Analyze (Analysis Level)

Break down information into its constituent parts and recognize their relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario.
Key Verbs: diagram, distinguish, illustrate, outline, infer, conclude, differentiate, attribute.

Create (Synthesis Level)

Put parts or elements together in such a way as to reveal a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn.
Key Verbs: create, compose, design, reorganize, formulate, write a new ending, tell.

Evaluate (Evaluation Level)

Make judgments about the value of proposed ideas, solutions, etc., by comparing the proposal to specific criteria or standards.
Key Verbs: judge, appraise, compare, contrast, criticize, justify, critique.

PSIA-NW Divisional Programs

HS= Hired Staff: Try-out, New, Experienced, Seasoned

CL= Certification Level: Registered, I, II, III

CS= Children's Specialist: 1, 2

SS= Senior Specialist: Foundations, 1, 2

FS= Freestyle Specialist: Foundations, 1, 2



Snowboard National Standard

- **Movement Analysis and Technical Knowledge Certification Level**

- **Level I** The successful Level I candidate will demonstrate the knowledge and comprehension of the AASI technical terms, concepts, and models listed below. The successful candidate will also demonstrate the ability to recognize movement patterns in riders that are learning and riding all green terrain, groomed blue terrain, and small freestyle features.
- **Level II** The successful candidate will demonstrate the application and analysis of the AASI technical terms, concepts, and models listed below. The successful candidate will also demonstrate the ability to recognize movement patterns in riders who are learning and riding all terrain, up to and including groomed black terrain and small freestyle features.
- **Level III** The successful candidate will demonstrate the ability to synthesize and evaluate the AASI technical terms, concepts, and models listed below. The successful candidate will also demonstrate the ability to recognize movement patterns in riders who are learning and riding all available terrain and snow conditions, up to and including competitive freestyle riders.

Remember (Knowledge Level)

Recall or recognize terms, definitions, facts, ideas, materials, patterns, sequences, methods, principles.
Key Verbs: name, list, state, describe, recall, label, retrieve, recognize.

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Make judgments about the value of proposed ideas, solutions, etc., by comparing the proposal to specific criteria or standards.
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Snowboard National Standard

- **Candidates will be evaluated based on the following criteria, terms, concepts, and models:**

- AASI STS concepts

Teaching concepts

- Learning concepts

Riding concepts

- Service concepts
Children's material

- C.A.P. model

Reference alignments A.T.M.L.

- Piaget's Stages of Development

- Maslow's Hierarchy of Needs

- The Teaching Cycle

Movement analysis process

- Cause-and-effect relationships

- Biomechanics related to snowboarding

Stance issues related to a rider's ability to flex, extend, and rotate

Snowboard National Standard: Teaching

- The successful Level III candidate will demonstrate the ability to teach all ages and skill levels to the general public. Additionally, the successful Level III candidate will be able to create a learning segment for his or her peers that demonstrates the evaluation and synthesis of the AASI technical terms, concepts, and models listed below.

Snowboard National Standard

- Candidates will be evaluated on their knowledge and application of the following:
- Safety, Your Responsibility Code
- Use of AASI Snowboard Teaching System (STS) concepts: Teaching, Learning, Riding, and Service concepts
- Presentation of logical progressions, from simple to complex, that are appropriate for the skill level of each student and relevant to task and desired outcome
- Accurate demonstrations appropriate to the task and skill level of students
- Professionalism at all times
- Use of feedback models that is timely, appropriate, and accurate
- Communication skills
- Group handling appropriate for terrain, task, and skill level of students

Children's Specialist Example

National Standard Excerpt

- **Specialist Level**
- **Teaching Standards**

- **CS 1**

- The successful CS I participant will demonstrate the ability to present a teaching segment in a safe, effective manner and demonstrate the knowledge and comprehension of the technical terms, concepts, and models listed. The successful participant will demonstrate the ability to teach to children in the beginning zone in green to groomed blue terrain.
- Options to lesson presentations include: participation in group discussions, teaching to peers in small groups, active participation with clinician in understanding methodology of the teaching cycle.

- **CS 11**

- The successful CS II participant will demonstrate the ability to choose appropriate exercises, games and tasks and teach a safe, effective skill progression that demonstrate the application and analysis and the ability to synthesize and evaluate the technical terms, concepts, and models listed.
- The successful participant will demonstrate the ability to teach to a spectrum of children from beginning to advanced zones and in terrain up to and including groomed black terrain.

- Knowledge and Comprehension- Defined as the ability to recall data or information. Understands the meaning and interpretation of instructions and problems. States a problem in one's own words.*

- Application and Analysis- Defined as the ability to apply what was learned in the classroom into novel situations in the work place. Separates material or concepts into component parts so that its organizational structure may be understood.*

- Synthesize and Evaluate- Defined as the ability to put parts together to form a whole, with emphasis on creating a new meaning or structure. Make judgments about the value of ideas or materials.*

- *Definitions from Bloom B. S. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co In

Children's Specialist Example

National Standard Excerpt

- **Specialist Level**
- **Experience Requirements**

- **CS I**

- The successful CS I participant will demonstrate the *knowledge and comprehension* of the technical terms, concepts, and models listed below. The successful participant will also demonstrate the ability to work with children that are learning and moving in all green terrain and groomed blue terrain. Requirements of participation include a Certification Level 1 in any alpine discipline.

- **CS II**

- The successful participant will demonstrate the *application and analysis* and the ability to *synthesize and evaluate* the technical terms, concepts, and models listed below. The successful participant will also demonstrate the ability to work with children who are learning and moving in all terrain up to and including groomed black terrain. Requirements of participation include a Certification Level 2 in any alpine discipline.

- Knowledge and Comprehension- Defined as the ability to recall data or information. Understands the meaning and interpretation of instructions and problems. States a problem in one's own words.*
- Application and Analysis- Defined as the ability to apply what was learned in the classroom into novel situations in the work place. Separates material or concepts into component parts so that its organizational structure may be understood.*
- Synthesize and Evaluate- Defined as the ability to put parts together to form a whole, with emphasis on creating a new meaning or structure. Make judgments about the value of ideas or materials.*

Practicum

- Scenario 1: instructor John is working towards Level II certification. He has three years of ski instruction under his belt. John is a part-time instructor, working on weekends for his snowsports school. John is asked to explore his knowledge of the skiing skills concept.
- Scenario 2: you have received your PSIA/AASI-NW Snowsports Instructor magazine, Spring 2010. You have read the article, “First the Proof, Then the Pudding” by Dave Lucas. You are explaining this article to your fellow instructor friend.
- Scenario 3: exploration of the transition from certification level I to certification level II utilizing the fundamental skill concept of rotary.

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Can <u>name</u> or <u>list</u> the 4 common skills of skiing	Can <u>summarize</u> the main component of each skill	Can <u>demonstrate</u> a teaching progression using one of the skills for a medium radius open parallel skier	Can <u>compare</u> and <u>contrast</u> how the common skills relate to specific body parts	Can <u>formulate</u> and <u>construct</u> a new alternative teaching progression based on outcomes shown by the student	Can <u>appraise</u> the accuracy and effectiveness of the progressions based on student outcomes and can <u>defend</u> the method

Can <u>describe</u> or <u>state</u> the main point of the article	Can <u>generalize</u> why this article is important to ski instructors	Can <u>demonstrate</u> how to <u>apply</u> the concept in a short versus medium radius turn	Can <u>infer</u> and then <u>outline</u> how to apply the concepts using multiple examples for both a child and adult following the teaching cycle	Can <u>propose</u> and <u>write</u> a new ending to the article based on how you would utilize the information for your student	Can <u>argue</u> both points: why you would have been successful or not successful had you been the author of the article topic
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Can <u>recall</u> that the foot and leg turn under a stable upper body	Can <u>explain</u> the ball and socket joint separating the upper and lower body facilitating rotation of the leg	Can <u>apply</u> and <u>show</u> steering movements that contribute to the shaping of a turn	Can <u>deconstruct</u> the outcomes of stopping the rotation of the foot and leg in the fall-line of a turn	Can <u>combine</u> skills and <u>relate</u> outcomes of adding edging movements to rotary movements to shape a turn	Can <u>describe</u> and <u>defend</u> when a student is ready to move to steeper terrain based on rotary skill blending
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Scenario 1: instructor John is working towards Level II certification. He has three years of ski instruction under his belt. John is a part-time instructor, working on weekends for his snowsports school. John is asked to explore his knowledge of the skiing skills concept.

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Can <u>name</u> or <u>list</u> the 4 common skills of skiing	Can <u>summarize</u> the main component of each skill	Can <u>demonstrate</u> a teaching progression using one of the skills for a medium radius open parallel skier	Can <u>compare</u> and <u>contrast</u> how the common skills relate to specific body parts	Can <u>formulate</u> and <u>construct</u> a new alternative teaching progression based on outcomes shown by the student	Can <u>appraise</u> the accuracy and effectiveness of the progressions based on student outcomes and can <u>defend</u> the method

Scenario 2: you have received your PSIA/ AASI-NW Snowsports Instructor magazine, Spring 2010. You have read the article, “First the Proof, Then the Pudding” by Dave Lucas. You are explaining this article to your fellow instructor friend.

Can describe or state the main point of the article

Can generalize why this article is important to ski instructors

Can demonstrate how to apply the concept in a short versus medium radius turn

Can infer and then outline how to apply the concepts using multiple examples for both a child and adult following the teaching cycle

Can propose and write a new ending to the article based on how you would utilize the information for your student

Can argue both points: why you would have been successful or not successful had you been the author of the article topic

Scenario 3: exploration of the transition from certification level I to certification level II utilizing the fundamental skill concept of rotary.

Can recall that the foot and leg turn under a stable upper body

Can explain the ball and socket joint separating the upper and lower body facilitating rotation of the leg

Can apply and show steering movements that contribute to the shaping of a turn

Can deconstruct the outcomes of stopping the rotation of the foot and leg in the fall-line of a turn

Can combine skills and relate outcomes of adding edging movements to rotary movements to shape a turn

Can describe and defend when a student is ready to move to steeper terrain based on rotary skill blending

Summary

- **Instructor**
 - applicable from beginning to advanced experience
 - how and when to move student clients along
 - self measurements of progress: teaching, skiing, technical
 - **TD**
 - measurements of when to move staff along certification spectrum or specialist programs
 - tool for advancement in school: class zones, supervisory positions
 - **Divisional Staff**
 - define outcomes for one day or multi-day events
 - measurement tool of how deeply to explore goals of clinic
 - **Examiners**
 - certification guide
 - address learning and teaching styles: evaluation of cognitive understanding
 - National Standards
- Ultimately benefiting.....



Our Students.....