

The Exclusionary Standard:  
An Evaluation of Bloom's Taxonomy in a Modern Context  
Sarah (T.J.) Trevino  
The University of Texas at San Antonio

## Abstract

This work details the development and ideology behind Benjamin Bloom's framework and categorization of goals within an educational setting and breaks it down in order to evaluate the benefits and deficits of the taxonomy within a twenty-first century context. Using references from student presentations, *The New Teacher Book: Finding Purpose, Balance, and Hope During Your First Years in the Classroom*, William Ayers' book, *To Teach: The Journey of a Teacher*, several outside scholarly resources, and a personal reflection on educational history and upbringing, this paper will analyze and come to a conclusion about each level of Bloom's Taxonomy and how effective or ineffective it is with the level of diversity and variety of personal and collective needs within the classroom. Some points within this work are subjective, while others will be backed with supporting evidence. The goal is to look critically at why teachers still make use of Bloom's Taxonomy today and whether or not it remains a necessary formulaic approach to education in 2016.

*Keywords:* Bloom's Taxonomy, educational standards, diversity in the classroom

### The Exclusionary Standard:

#### An Evaluation of Bloom's Taxonomy in a Modern Context

Developed originally in 1956 by a team of collaborators headed by educational psychologist Benjamin Bloom, the framework that was originally known as the *Taxonomy of Educational Objectives* was created in order to categorize those objectives into understandable terminology for educators to build on their lesson plans and standards for learning. These objectives have been adhered to and considered near educational “law” for years in both K-12 and higher education classes. However, it's been no stranger to scrutiny in its developmental and post-developmental timelines, having already been the subject of revision in 2001 by another group of researchers including psychologists, curriculum specialists, and testing/assessment specialists who deemed the “somewhat static notion of ‘educational objectives’ (in Bloom's original title)” (Armstrong) to be mildly irrelevant. Deemed outdated and in need of an update given the modern context of the current world, the new theory “points to a more dynamic conception of classification” (Armstrong) and not only opted for revision of the original taxonomy, but also created an entirely separate one, describing the development of cognitive processes in an educational setting. However, even 2001 was fifteen years ago, and at the rapid pace that our world is currently evolving, it's important to look at this “new” taxonomy – entitled “A Taxonomy for Teaching, Learning, and Assessment” - to discover whether or not it too requires an evaluative process to determine whether or not every aspect of it is just as valid as it was when it was first conceived.

#### **The “Modern” Taxonomy**

Consisting of six categories, both the original and the more modern framework follow similar formulaic approaches. Both typically assign themselves in a pyramid of progress (though

other shapes and infographs have been used in the past, such as circles and upside-down trapezoids), beginning the process at the bottom rung and proceeding in an upwards direction. Bloom's original taxonomy, starting from the bottom and going up, was as follows: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. Each stood for a particular concept of cognitive development within an educational and learning context. A shorthand tool for remembering each concept is by personalizing them, starting at Knowledge which can be described as "I've Heard of It", Comprehension as "I Can Make Sense of It", Application as "I Can Use It", Analysis as "I Can Break It Up Into Parts", Synthesis as "I Can Create With It", and Evaluation as "I Can Grade Others On It" (Antuna, 2016). Each of these concepts and developmental steps can dictate the course of a lesson plan surrounding a *core* concept, such as the learning of another language or the scientific method.

In 2001, however, the revision group headed by one of Bloom's former students, Lorin Anderson, published the new version of the taxonomy which was developed to fit a more modern standard of learning. The main change that was made was the terminology and how each developmental step was named. By changing the steps from nouns to verbs, it better described the exact cognitive process that was occurring with each step up the pyramid. Not only does the revised version make use of verbs in the categories themselves, but they also lend themselves to the use of sample verbs as a descriptor of each category.

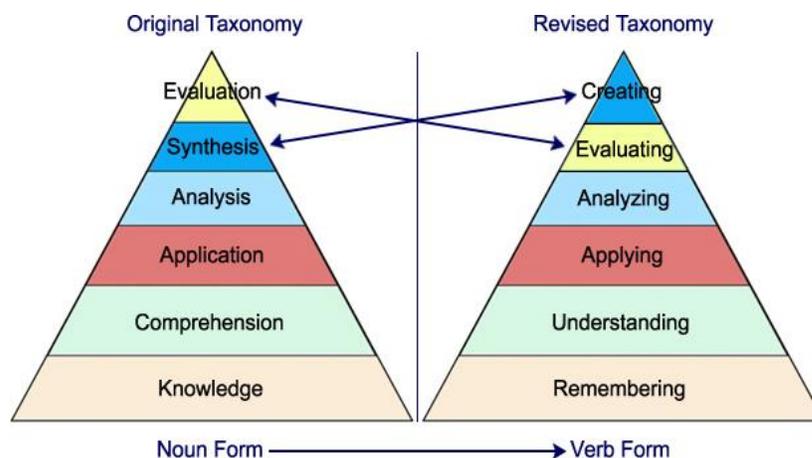


Figure 1. Bloom’s Original Taxonomy vs. the Revised Taxonomy

Revised Bloom’s Taxonomy					
Cognitive Level	Sample Verbs to Use in Writing Intended Student Learning Outcomes				
Remembering	Define Duplicate	Identify List	Name Recall	Recognize Reproduce	Retrieve Tell
Understanding	Calculate Categorize Clarify Classify Compare	Conclude Contrast Describe Discuss Exemplify	Expand Explain Identify Illustrate Infer	Interpret Locate Match Outline Paraphrase	Predict Report Restate Summarize Translate
Applying	Carry out Classify	Demonstrate Execute	Illustrate Implement	Practice Solve	Use Utilize
Analyzing	Appraise Attribute Compare Contrast	Deconstruct Detect Differentiate Discriminate	Distinguish Examine Formulate Infer	Integrate Organize Parse Relate	Select Sequence Structure Test
Evaluating	Appraise Check Coordinate	Critique Defend Detect	Dispute Judge Monitor	Prioritize Rate Reconstruct	Select Support Verify
Creating	Change Combine Compile	Compose Construct Create	Design Formulate Generate	Hypothesize Improve Invent	Plan Predict Produce

Figure 2. Sample Verbs to Use in Writing Intended Student Learning Outcomes

Along with that change was another major one: the swap between Evaluating and Creating, making the factual-based assumption that one could technically evaluate before they are able to create. For example, observing an elementary aged art class at Scobee Elementary, I’ve personally witnessed a class in which the teacher, Mrs. Adams, was helping a fourth grade

class with the concept of a “portrait”. While each student was able to see the result of following Rembrandt’s formulaic approach to the development of a portrait (the creation of a circle and then using lines and measurements to calculate where the eyes, nose, and mouth would be), not all were able to fully replicate it in a manner that followed the formula. However, that doesn’t stop fourth graders from pointing out when another student has clearly done it “wrong”. Each student is fully able to assess and evaluate another student’s work, but the creation and replication of their example was not as easy, requiring a higher level of cognitive understanding and motor-skills in order to accomplish.

Overall, the revision seems sound, and the verb usage is an important tool to fully understanding the categories as they pertain to the process of student development and comprehension of a concept. However, were those changes the only necessary ones to advocate for appropriate categorization in an even *more* modern context? In fifteen years, the evolution of educational standards and practices, at surface level, seems stagnant and unwilling to change in order to fit the developing technology-based society that both we as educators and our students are facing as the days, months, and years pass. In order to properly assess how we see the development of our student and their capacity for learning, we must break down our revised Taxonomy and seek out the areas that need evaluation and change. Therefore, we begin with step one.

### **Remembering and Understanding**

The first concept in Bloom’s revised Taxonomy is *Remembering*: the act of retrieving information that was once gathered at some point and being able to continue to retrieve it reliably. However, is the ability to retrieve this information as crucial to the digital age as it once was to the pen-and-paper, textbook-centric years before now? With the tools on hand to have

information readily available, does a student truly need to be able to recall the quadratic formula in its entirety to be able to fully understand how it works and how to utilize it? Not necessarily. A simple Google search can offer the formula with little to no effort in one to two seconds flat. Information recall is almost unnecessary to anyone with access to the Internet, and while Bloom's taxonomy seems to hinge those "higher-level" thinking skills on the ability to accomplish the "lower-level" thinking skills, a student who is learning Rembrandt's formulaic approach to creating a portrait – as described in our earlier scenario – may not necessarily remember the formula exactly. However, with enough trial and error, may come across another method entirely to accomplish the same result. In a book by Phillip J. Hilts entitled *Memory's Ghost: The Nature of Memory and the Strange Tale of Mr. M*, a man by the name of Henry is followed and studied after an operative procedure to cure his epilepsy resulted in the loss of episodic memory. Despite his lack of recall ability, Dr. Spencer Kagan of Kagan Online says:

The finding that loss of ability to recall new incidents did not lower Henry's IQ is strong evidence that a variety of "higher-level" skills do not depend on the "lower-level" skills. If we believed thinking skills were hierarchical, we would expect that loss of recall would interfere with complex learning and ability to perform the tasks on an intelligence test. In fact, the case of Henry (and others like him) proves presumed "higher-level" thinking skills in Bloom's Taxonomy do not "demand the skills and abilities" of the "lower-level" thinking skills. (Kagan, 2005)

Information recall, therefore, may not be crucial to the developmental hierarchy of the revised taxonomy. With so many resources available, why then should students have to actively flex their recall skills if it's not necessary? Of course, this delves into the notion of "hard work" and flexing "mental muscles" in order to boost memory recall in times without effective technology

on hand. Still, I recall teachers in grade school with their never-ended chant of “You’ll never have a calculator available in high school! Or in college!” Now grade-schoolers have access to calculators and complicated mathematics applications such as *Wolfram|Alpha*, an accessibility application – primarily for mathematical formulas - that serves to “make the world’s knowledge computable” on their desktop computers, laptops, or cell phones. So why is it deemed necessary to devote time to something so trivial when more time could be dedicated to those higher-level thinking processes?

So, if not recall, then of what import is *Understanding*? Can it still be applied to the digital-age in the same manner it’s been for the last sixty years? Academic content standards, performance, standards, and proficiency levels (The State Content and Student Performance Standards Setting Process, 1996) has been the typical application for creating standards in the American education system for several decades now. What will the students learn, to what extent, and how will they accomplish this? However, because the prospect of “understanding” is not to be included in the performance aspect of this formula for the creation of standards, how then are we to be expected to dictate the concept of understanding in one hierarchy of cognitive development and find it as something unquantifiable to actual learning? Because of the nature of diverse learners and, to that effect, diverse learning, the concept of understanding and comprehension needs to be looked at on an individual basis; something that schools and administrations searching for quantifiable and measurable data will forever combat. The measure of success, to them, needs to be hard data, but how can a fourth grader in Mrs. Adam’s class who cannot understand the exact makeup of the pigments of the colors red and blue be expected to do so in a measurable way? Surely what matters, in this case, is the end result that mixing these two colors will yield in a purple pigment all the same. Understanding has multiple levels and

classifying it all into one level yields constraining effects. In his book *To Teach: The Journey of a Teacher*, William Ayers brings curriculum into the spotlight as a point of scrutiny and calls for diversity in the way we approach the concept of understanding:

Curriculum is more than pieces of information, more than subject matter, more even than the disciplines. Curriculum is an ongoing engagement with the problem of determining what knowledge and experiences are the most worthwhile. With each person and with each situation, that problem takes on different shadings and meanings. (Ayers, 2010).

The diversity of the modern classroom calls for, yes, a better understanding of understanding. A high school or college student can build a personal computer – placing the CPU in its proper place without mistake, rewiring the cables, and installing fans – without entirely understanding how each component makes the computer run and function. What matters to that student, at that time, is that the computer functions as needed. So while necessary, this certain step in Bloom's Revised Taxonomy is worth a second, third, and fourth look to truly coincide with a modern and diverse population of learners whose concept of importance varies too vastly to truly put a definition to the measurable comprehension that our education system is asking for.

### **Applying and Analyzing**

The third step in Bloom's Revised Taxonomy is *Applying*, another way of describing a student's ability to take what they have learned and use it in appropriate context and in an appropriate way. For instance, going back to my experience in Mrs. Adam's art classroom, one particular third grade class was learning how to create insect designs on construction paper using only glue. Most students were fairly successful after seeing a demonstration of the techniques

provided. Some were messy and used too much material, others not enough. One student in particular was entirely unable to accomplish the task given to him, even with supplemental materials such as pencil and crayon in order to accomplish a similar design. In the end, when time was up, the student went into a hyperventilating episode because of his inability to finish, bordering on a full blown panic attack by the time the next class came in. Escorted out by other teachers after he calmed, the end result was that he was unable to apply what he had learned and had seemingly “clearly” understood at first glance. Does this dictate him a failure? Well, no. This was art class, and typically, the grades received in art classes at such a young age are based on conduct and participation. However, had it been another class where the stress of finishing something had overtaken his ability to do so? Perhaps. The situation is hypothetical, but all too real for students who suffer from physical, mental, or learning disability. Despite an inherent inability to apply a certain knowledge, it does not mean that they cannot analyze nor evaluate it.

Physical disability such as blindness and deafness plays a part too in whether or not a student is fully able to apply their leaning in a context deemed acceptable by educational standards using Bloom’s Taxonomy for cognitive development. According to a student presentation entitled *Education for the Visually and Hearing Impaired*, “around 285 million people worldwide are visually impaired” (Hesseltine, 2016), while the World Health Organization states that “360 million people worldwide have disabling hearing loss” (World Health Organization, 2015). Among these are students who require specialized teaching and those who do not, but are still expected to fulfill each and every hierarchal standard in order for learning to be considered as accomplished. However, a deaf child cannot be expected to phonetically pronounce words as he reads them without being able to hear them – so is he held to the same standards? If not, why do these standards exist if they are to be so exclusionary? A

blind child may not be able to apply the reading speed they can accomplish with a children's book in braille to a larger, more complex chapter book, though that hierarchy dictates that the application must come before analyzing. How are these students expected to meet this standard when given a limited amount of time before moving onto the next subject, to the next grade, to the next level of schooling? Application is as wide as understanding and without the adequate time necessary for each student to apply what they've learned in a manner that befits their individual speed of learning, then the standard holds nothing but an impassable obstacle for them to stumble on. Ayers again confronts this issue in his book.

Proponents of a phonics approach to teaching children to read are eager for youngsters to break the code, to get the skill, and to become independent readers; they argue for moving from the specific to the general, from letter sounds to blends to words to sentences, and they assume that a sense of meaning and power of reading will come in time. Those in favor of a "whole-word," "language experience," or "whole-language" approach move from the general to the specific, and they reason that once the power of language, reading, and writing are understood, the relationship of letters and sounds will also emerge. While the debate is often fierce, usually backed up with lots of anecdotal evidence and studies cited, the truth is that effective teachers succeed with either approach, or with some other approach altogether. This is because reading is picked up here and there from a range of experiences and activities; the specific approach or technique of a given teacher is not isolated from the world or even from other things occurring in the classroom. (Ayers, 2010)

To hold ourselves, then, above students with varying needs of supplemental standards to follow, is ostracizing the differentiating factors that make our students so diverse. To properly provide the education that these students need is to understand that application can have different

meanings. Without that, students will continue to fall behind in a curriculum that was never designed for them to succeed.

*Analyzing* follows Application; the process of taking a concept and being able to categorize, deconstruct, or validate the information being obtained; “Identifying and analyzing patterns, organization of ideas, recognizing trends” (Antuna, 2016). This prospect is, from a personal standpoint, one of the most important to consider in a critical light. Despite its importance – the process of analytics is undoubtedly crucial to dictate whether or not a concept is understood *enough* to be able to formulate a personal opinion about it – I feel as though analysis and analyzing should not be strict in its placement in the hierarchy. Analysis happens throughout development. From information recall, comes analysis as to whether or not a subject is worth remembering – an allusion back to the importance of information recall. Analysis also happens during understanding and comprehension. Deconstruction comes from the understanding of construction. Of course, all of this follows the appropriate hierarchy in a technical way, though Bloom’s Revised Taxonomy fails to acknowledge that these steps are not law. As was the case with Henry M., not all lower-levels of thinking need to be met to obtain the higher levels. More importantly still, higher-levels of thinking – defined as they are - are not entirely necessary to be successful. Still more complicated is the notion of analysis as a definable thing. Breaking down the points of analysis can be beneficial. Identification can be considered effective analysis. Categorization can, too. How students do this, however, varies and it’s ill-fitted to define analysis as one definitive thing or process.

In *The New Teacher Book*, an anecdote by Melanie Quinn illustrated the hazards of her son’s school’s elementary aged reading standards, pointing out how it left him confused and displeased with how they were learning how to read; how the concept of “learning” had been so

haphazardly dumbed down that it seemed ineffective at all. How would analysis be comprehensive in a class that did not challenge the reader as he should be, or cater to his learning style? “All of the writing and thinking is done by the publisher, and the children merely fill in disjointed blanks. Once they identify the pattern, there is no need to even read the surrounding text” (Quinn, 2010). Analysis and the components that make it up are important, though of what importance are they to a student who is merely following and disassembling patterns? It’s crucial that in order to fully make use of analysis as a means of cognitive development, we need to push for its use in every step and every aspect of the developmental process. Not just following application and not just preceding evaluation.

### **Evaluating and Creating**

*Evaluation* is defined as the ability to judge or critique an existing concept and, at times, the determination of whether or not a peer or another person can accurately and effectively apply and use a concept being taught. For example, those fourth grade students that were doing portraits in art class? Of course, they would be vocal to the ones who were doing it incorrectly, or they would opt to judge on a basis of accuracy, if another student were doing a self-portrait. This evaluative process was, at one time, dictated by Bloom’s Taxonomy as the highest level of cognitive thinking. However, what Bloom neglected to realize was that evaluation happens without reason. This is where the notion of pre-existing prejudices come in in the context of the classroom. Dr. Spencer Kagen pinpoints these sometimes instinctive pre-judgements as an act of the functions of the amygdala: a part of the brain which dictates fight or flight responses to a certain stimulus.

All primates jump at the sudden sight of a snake even if they have never before seen a snake!

When we see a snake, we jump before we become consciously aware we are seeing a snake.

Evaluation is occurring without any conscious recall, comprehension, analysis, application, or

synthesis. Thus, at least some types of evaluation are hard wired into the system and are not dependent on "lower-level" thinking skills as dictated by Bloom's Taxonomy. We all have experienced the instantaneous "gut" reaction that tells us if we like or dislike someone or something. (Kagen, 2005)

This instinctive evaluation plays a larger part in education than the administration likes to admit. A student's ability to evaluate another or something in general, can be severely inhibited by cultural, familial, or socioeconomic based judgements on the world around them. A student who may be uninterested in a subject may fully possess the ability to navigate Bloom's Taxonomy with no issue, but with the lack of motivation and a pre-judgement towards a subject that an educator is not actively fighting to combat will yield little to no positive results. Does this dictate that a student is slated to fail? It certainly shouldn't. Yet, standards push for the ability to accomplish their performance standards without any thought towards interest or diversity in student lives. Therein lay the importance of what is known as *Multiculturalism*. Multiculturalism is a pedagogical approach which rejects racism and discrimination; educates students on the importance of social justice, and celebrates diversity within the student population. (Multiculturalism and Pop Culture, 2016). This concept exists in order to determine a more equitable and accessible means of education for a variety of learners, *equity* meaning the "means of recognizing differences and allocating resources to compensate" (Notions of Equity vs. Equality, 2016). Using this emphasis on diversity and acceptance within a teacher's pedagogy is critical in order for appropriate evaluation to occur. Despite this approach, however, it's not guaranteed that multiculturalism will reach every student. What then do we hinge our evaluative criteria on? An example brought forth by *The New Teacher Book* contributor, Bill Beglow, further explains the ever present issue.

For example, another benchmark – “Explain how laws are developed and applied to provide order, set limits, protect basic rights, and promote the common good” – similarly fails the multicultural test. Whose order, whose basic rights, are protected by laws? Are all social groups included equally in the term “common good”? Between 1862 and 1890, laws in the United States gave 180,000,000 acres (an area the size of Texas and Oklahoma) to privately owned railroad companies, but gave virtually no land to African Americans freed from slavery in the South. Viewing the Constitution and other U.S. laws through a multicultural lens would add texture and depth to the facile one-sidedness of Oregon’s “neutral” standards. (Bigelow, 2010).

Diverse student and teacher populations insist on a curricula and evaluative standards that can be applied to all involved in Bloom’s developmental process. Where we are now, there is no definitive means to appease all student. Differentiated learning can be one solution, but it requires the involvement of all staff in institutes of education. Not just the teachers.

Then to the final step of the taxonomy pyramid, *Creating* sits atop all others, the notion being that once a student has Remembered, Understood, Applied, Analyzed, and Evaluated, they can finally create. However, any student within an artistic field of study will tell you otherwise. To *create* is a word that without context, is nearly infinite in possibilities. What does it mean to create? Create something physically? Create something mentally? Using imagination or mental processes that cannot be visualized? Can a blind child create? A deaf one? What about a student who does not possess the appropriate motor skills to use a pencil? These questions may seem to have answers that can be definitive, but considering the act of creation to be one solid behavior and action that can be quantified. Previously known as *Synthesis*, this area of the taxonomy focused on “using old concepts to create new ideas; design and invention; composing, imagining,

inferring, modifying, predicting, and combining” (Antuna, 2016). Creativity, however, can be heavily subjective. To reiterate the point of standards, schools want hard data to determine whether or not children are “learning”. Creating can be spun, in certain ways, to fulfill this standard, but to really look at creation as a whole as something that should be quantified is detrimental to the act of creation itself. Again, this goes back to the issue of lack of multiculturalism in education. Creation is determined by the creator. Is it properly showcasing the creator’s ability to show what they have learned? In high school, I considered my essays to be fantastic works of literature, showing my ability to spin tales that even the teachers who were most familiar with me would think that they were actual recounts of my life. Yet, my grade received never reflected that. The contents of my story didn’t matter. What mattered was that I went over the proposed limit of paragraphs. What mattered was that I used a few extra commas. What mattered was that I misspelled recommended as “reccomended”. I was a creator. I had created something that showed my grasp of the language, punctuation skills, grammar skills, and an edge-of-your-seat nail-biting narrative, to boot. The teachers who graded me disagreed. All because of a few mistakes.

Proposed instead, is the prospect of learning *by* creating. Turn the taxonomy around to involve creation and the concept of celebrating failure as a means of improvement. According to blog writer and Library Media Specialist, David Phillips, there is a reasoning for learning-by-doing.

Since the very beginning, this is primarily how people have learned. Even small children learn by experimenting, trying out new things, wondering how something works, creating constructs that are concrete representations of abstract ideas, making mistakes and trying another way, and finally reaching the goal they have in mind. Sometimes kids need a start—as when a parent helps a child learn to ride a bike—but if the kid is ready to learn, he/she will soon be doing it on his/her

own. And consider this: when we teach a child something at home, we don't start with formal instruction, standing at the front of the room, and lecturing—rather, we start with the basics of the skill and hands-on engagement. Whether we are helping a 5-year-old learn to make sugar cookies or starting a 3-year-old on an iPad learning game, we begin with actual engagement. (Phillips, 2013).

One method for this sort of learning is what's known as "Project-Based Learning". The use of projects which emphasize the act of creating and doing over remembering and analyzing. A large push for the use of PBL in public schools has been active through the U.S., though very rarely does it seem to take. At present, PBL is mostly employed in private and charter schools, with public schools yearning for hard data to justify the use of an approach that deviates from the classical norm. However, that data exists. A study done by REL West entitled *Effects of Problem Based Economics on High School Economics Instruction* came up with enough of this data to bring the benefits of Project-Based Learning to light.

This experiment was designed to test whether problem-based instruction in high school economics can result in gains in students' content knowledge. The analysis at the primary (student) level indicates that students in the spring 2008 semester whose teachers had received professional development and support in Problem Based Economics outscored their control group peers on the Test of Economic Literacy by 2.60 items (effect size = 0.32). Student academic performance was also assessed using open-ended performance tasks that tested problem-solving abilities in short essays. On a composite score of these tasks, students in the intervention group outperformed those in the control group (point estimate of 0.54; effect size = 0.27). This difference was significant at the .05 level after adjusting across the two primary outcome domains to account for multiple comparisons. (REL West, 2011).

Creation is not something that should be put at the end of the developmental journey, but should be utilized throughout, not unlike analysis and application. True learning should be an amalgam of the concepts within Bloom's taxonomy, using creation as a tool to hit each and every point along the way. Negating it before the developmental step following evaluation downplays the importance of the ability to create and the diversity of students and their methods of creation.

### **Conclusion**

So with this criticism of both Bloom's *Original* Taxonomy and the Revised Taxonomy that we used today, do we, as educators completely disregard it as irrelevant in the face of modern development? The short answer? No. The broad aspects of each steps are sound. These concepts are, in some ways, necessary for students to know as they progress through their educational journey. However, what needs to be addressed is the order; this notion that each thing must be completed in *this* way by doing *this* specific thing by *this* specific deadline in order to deem a student a successful learner. What is of more import is the concept of the developmental cognitive process as a whole. We remember by doing, we learn by analyzing, we learn by applying and evaluating, but no one thing should be so segregated from the others. In truth, we apply by creating. We evaluate by analyzing. We utilize tools for memorization. In a modern context, Bloom's Taxonomy is not negligible, but it requires evaluation in and of itself. The diverse populations in modern education call for something more malleable, more suited for the individual's needs, rather than the needs of a collective. Weaving these cognitive processes together, in and out of each other, out of order, in another order entirely, or mashing all of them into a putty of development are all effective means of approaching learning. To hope for a new face of learning is to educate ourselves of the basis of these concepts and morph them to fit a

new generation. To risk the success of our future generations in order to maintain the status quo is dangerous. Without that dedication to change, we as a society will remain stagnant.

## References

- About Wolfram|Alpha. (n.d.). Retrieved April 07, 2016, from  
<http://www.wolframalpha.com/about.html>
- Antuna, M. (2016, March 1). *Bloom's Taxonomy*. Lecture Notes.
- Armstrong, P. (n.d.). Bloom's Taxonomy. Retrieved April 07, 2016, from  
<https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>
- Ayers, W. (2010). *To Teach: The Journey of a Teacher* (3rd ed.). New York: Teachers College Press.
- Burant, T. E., Walters, S. E., Salas, K. D., & Christensen, L. E. (2010). *The New Teacher Book: Finding Purpose, Balance, and Hope During Your First Years in the Classroom*. Second Edition. Rethinking Schools.
- Education for the Visually and Hearing Impaired*. [Rebecca Anderson, Kaitlyn Hesseltine, Amanda Gonzalez, Erwin Spencer, Jessica Vazquez, and Vanessa Vaello] (2016, April 5). Group Presentation.
- Hilts, P. J. (1996). *Memory's Ghost: The Nature of Memory and the Strange Tale of Mr M*. New York: Simon & Schuster.
- IACBE. Bloom's Taxonomy of Educational Objectives. Retrieved April 07, 2016, from  
<http://iacbe.org/oa-blooms-taxonomy.asp>
- IACBE. *Bloom's Comparison* [Image], Retrieved April 07, 2016, from  
<http://iacbe.org/oa-blooms-taxonomy.asp>
- IACBE. *Revised Bloom's Taxonomy* [Table], Retrieved April 07, 2016, from  
<http://iacbe.org/oa-blooms-taxonomy.asp>

Kagan, S., Dr. (2005, Fall). Rethinking Thinking - Does Bloom's Taxonomy Align with Brain Science? Retrieved April 07, 2016, from

[http://www.kaganonline.com/free\\_articles/dr\\_spencer\\_kagan/289/Rethinking-Thinking-Does-Bloom-s-Taxonomy-Align-with-Brain-Science](http://www.kaganonline.com/free_articles/dr_spencer_kagan/289/Rethinking-Thinking-Does-Bloom-s-Taxonomy-Align-with-Brain-Science)

*Multiculturalism and Pop Culture*. [Brittany Jasper, Chris Kearns, Bonnie Westmoreland,

Fernanda Mendoza, Jacob Granado, Josh Martin and Angelica Garcia] (2016, April 5).

Group Presentation.

*Notions of Equity vs. Equality*. [Valeria Cedillo, Alexis Garcia, Leslie Alvarez, Jeremy Berg, and

Justice Lovin] (2016, April 5). Group Presentation.

Phillips, D. (2013, January 16). Learning by Creating: Turning Bloom's Taxonomy on its Head.

Retrieved April 07, 2016, from <http://blogs.techsmith.com/for-educators/blooms-learning-by-creating/>

REL West. (2011, March). Effects of Problem Based Economics on High School Economic

Instruction. Retrieved April 07, 2016, from

[http://ies.ed.gov/ncee/edlabs/regions/west/pdf/REL\\_20104022.pdf](http://ies.ed.gov/ncee/edlabs/regions/west/pdf/REL_20104022.pdf)

The State Content and Student Performance Standards Setting Process. (1996, Spring). Retrieved

April 07, 2016, from <http://www2.ed.gov/pubs/IASA/newsletters/standards/pt2.html>

World Health Organization. (2015, March). Deafness and Hearing Loss. Retrieved April 07,

2016, from <http://www.who.int/mediacentre/factsheets/fs300/en/>