A Dichotomy of Necessary Behaviors and Implementation
of Constructivism
in Urban Schools

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Many theorists view behaviorism and constructivism as being on opposite sides of the learning spectrum. The backgrounds and underlying beliefs of these two theoretical concepts are very different, yet in classrooms both can be effective (Richardson, 2003). As evidenced in the application of Common Core Standards (National Governors Association Center for Best Practices & Council of Chief State School, 2010) and classroom experience, some educators see the need to allow students to construct knowledge in experiential ways based on key concepts that have evolved based on prior learning (Gordon, 2009). At the same time, educators use operant conditioning as they share content and manage their classrooms (Skinner, 1969). The technology that is becoming so synonymous with learning has as its foundation a behaviorist view that focuses on specified outcomes and observable behaviors pre-determined by a programmer (Vrasidas, 2000).

With all of these ideas considered, it seems logical that educators accept that a well-rounded approach which combines behaviorist and constructivist theoretical foundations should be implemented in their classroom. There are key behavior management strategies that are proactive and preventative, as well as establish structure to facilitate a successful learning environment in urban schools (Moore & Lewis, 2012). A structure is needed to prevent chaos and off-task behaviors, yet students need to be free to construct knowledge in ways that fit their learning styles. As urban students begin to actively engage in learning, boundaries should be set so that students operate in a respectful manner that encourages differences in opinion and exploration. Social learning expectations may be different from urban students' social-cultural realities (Moore & Lewis, 2012). Constructing knowledge involves taking risks and often involves unknown consequences. The behaviors exemplified within the learning community, should allow for students to feel safe to make mistakes and refrain from taking offense if another learner disagrees with their hypothesis. Since knowledge construction takes place primarily within the mind (Richardson, 2003), it becomes necessary for students to articulate their thoughts and their paths to knowledge when interacting socially.

With each new learning experience in an urban classroom, it is helpful for students to be provided with a model or given expectations to fulfill the learning task. This communication becomes the structure that sustains the learning experience, much like the skeletal system serves as the structure for the human body. "Good classroom management involves putting structures into place that capitalize on the social context of the classroom by creating a sense of community and assisting every student in gaining a sense of belonging" (Bloom, 2009, p. 129). To facilitate knowledge construction, urban students should be equipped with background knowledge that fits the appropriate academic framework that may be different from their current cultural or socio-economic framework. If students are exposed to *one* way to complete a task, then they are positioned to build a bridge to their prior knowledge (Moore & Lewis, 2012) as they attempt to construct meaning for themselves.

In this paper, it is argued that behaviorism and constructivism are not polar opposites. In urban classrooms, portions of each theoretical framework are needed to ease the imbalance that takes place in learning, while propelling students toward constructing meaning based on the sum of their experiences. First, the foundations of constructivism and behaviorism will be theoretically explored. Secondly, a description of the pragmatic use of these two theoretical foundations in urban classrooms through use of the Common Core curriculum (National Governors Association Center for Best Practices & Council of Chief State School, 2010) and educational uses of technology will be provided. In conclusion, there will be an illustration and discussion of the alliance between constructivism and behaviorism as it relates to outcomes in the urban classroom.

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CONSTRUCTIVISM DEFINED

Constructivism views "children as builders of their own cognitive tools, as well as of their external realities. For them, knowledge and the world are both constructed and constantly reconstructed through personal experience" (Ackermann, 2001, p. 7). Constructivism "maintains that individuals create or construct their own new understandings or knowledge through the interaction of what they already believe and the ideas, events, and activities with which they come into contact" (Ultan.r, 2012, p. 195). Thus, it can be surmised that students examine their environment to arrive at learning. Several philosophers and theorists have created a legacy of ideologies related to the field of education. Dewey, Piaget, and Vygotsky (Phillips & Soltis, 2004) have made an enduring impression on constructivist ideology.

Dewey

As a philosopher, John Dewey introduced the concept of the "whole child" (Stuckart & Glanz, 2010). He asserted that a child's experience constructing knowledge is individual and pragmatic. "Dewey focused on the transactions between the person and the environment" (Stuckart & Glanz, 2010, p. 5). Dewey reasoned that intelligence could not be measured by tests, stressed using personal interest to motivate students to embrace learning, and introduced the concept of instruction led by student needs or what is known as differentiated instruction.

"Through systematic inquiry, students examine problems, and in the process, they create solutions and new forms of knowledge, infusing content knowledge into their interests and experiences" (Stuckart & Glanz, 2010, p. 17). This type of inquiry-based learning should be collaborative, build upon prior knowledge, and require reconstructing information while in a social context (Stuckart & Glanz, 2010). Reflection as a part of the learning process is also a proponent that Dewey supported. Dewey encouraged teaching socially

relevant skills and giving students an opportunity to use them. Dewey felt that curriculum focused on improving the whole child was the recipe for success. In this way, teachers teach the students, not the test to the students. These ideals are mirrored in the Common Core Curriculum (National Governors Association Center for Best Practices & Council of Chief State School, 2010).

Piaget

Piaget asserted that children move gradually in their learning from concrete, observable ways of manipulating ideas to more abstract concepts using symbols and words (Ediger, 2012). Piaget referenced the concept of developmental stages which are similar to the progression of the life cycle of animals in order to explain his theory (Phillips & Soltis, 2004). According to Piaget's theory (Phillips & Soltis, 2004), as learning begins at infancy in the sensorimotor stage, knowledge is *constructed* by a learner through interactions with their environment. In his research, Piaget found that

> as a result of handling, dismantling, and generally transforming its surroundings, the child gradually derived a set of concepts that were fruitful; at the same time the child started to 'internalize' its actions, that is, it started to build up a scheme or program of the actions it was performing upon its environment (Ultan.r, 2012, p. 199).

This process of manipulating the environment is part of the preoperational stage of development. In the preoperational stage, learners are not able to manipulate ideas in their minds, they must have an environmental or concrete connection to the idea (Phillips & Soltis, 2004). After many environmental experiences, learners progress to the concrete operations stage and are able to link ideas conceptually. In the final stage, formal operations,

thinking is conceptual and the learner participates in abstract problem-solving as an adult would (Phillips & Soltis, 2004) .

Vygotsky

Vygotsky's view of sociocultural constructivism has the strongest correlation to the alliance of constructivism and behaviorism. Vygotsky stressed the impact of culture and the social environment on a learner's construction of knowledge. "Vygotsky, aware that learning takes place in social settings, was more interested in the learning *potential* that a child might have--what the child might accomplish with guidance of adults or older peers"(Phillips & Soltis, 2004, p. 58). In constructivism "the relationship between knowledge and reality is a result of individual and social experiences" (Ultan.r, 2012, p. 199). Vygotsky posited that students operate within their zone of proximal development (ZPD) and are coaxed through social interactions with peers and more knowledgeable adults toward knowledge construction beyond their present position to another level of depth in learning (Dixon-Krauss, 1996). This progression continues as students progress in learning. The interaction between learner, expert, and environment were pivotal to Vygotsky's argument. The adults provide a "scaffold" that supports students as they construct knowledge based on previous social and cultural experiences (Dixon-Krauss, 1996).

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BEHAVIORISM EDUCATION

Behaviorism developed from research about how animals learn, are directed by instinct, navigate their world, and solve problems (Phillips & Soltis, 2004). E. L. Thorndike and B. F. Skinner used animals, such as cats, rats, and pigeons to verify their learning theories, just as many scientific theories have been tested on animals prior to their use with humans. Thorndike distinguished a set of "laws for learning" (Phillips & Soltis, 2004) that by experience an animal creates a quick pathway in their mind when confronted with a situation that they have experienced previously. Thorndike concluded that a positive response from a stimulus would cause the inciting action to be repeated, therefore, making that particular pathway in the mind stronger (Phillips & Soltis, 2004). The stronger the pathway, the more the behavior is repeated when the situation presents itself again. The collective pathways in the mind represent "learned" behaviors (Phillips & Soltis, 2004).

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Skinner found that it was not necessary to reward desired behaviors every time that they manifest (Phillips & Soltis, 2004). Randomly and frequently rewarding behavior causes the behaviors to persist (Phillips & Soltis, 2004). Skinner resolved that punitive punishment in classrooms often resulted in negative associations with education that pushed students away from the institution designed to inspire learning (Skinner, 1969). Instead, Skinner (1969) proposed the use of operant conditioning to reinforce "social contingences" that foster peer relationships with minimal criticisms and make school more welcoming for the student. The use of tokens or credit points to reinforce desired classroom behavior is suggested by Skinner (1969). Students elicit free choice to determine how the tokens or credit points are redeemed, thus displaying appropriate behavior is associated as positive and motivates students to continuously display appropriate classroom behavior. Both Thorndike and Skinner felt that their theories were applicable to humans. Today, teachers enact their agreement by giving students stickers and positive praise when students display positive behaviors that bear repeating.

CONSTRUCTIVISM AND THE COMMON CORE

The current trend in education is to establish a common curriculum between states that highlights the most pertinent skills necessary for youth to be successful in the workforce. Some states have adapted their current curriculum for this purpose, while others have instituted The Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School, 2010). The standards are an attempt to standardize transferable skills across the nation that enables students to be competitive in a global economy. The outcomes of the Common Core curriculum are evidence-based and require that students use higher-level processing (National Governors Association Center for Best Practices & Council of Chief State School, 2010). These skills are applicable assets in the current workforce. Using the Common Core State Standards to educate students enlists a constructivist approach. The curriculum is designed to encourage students to build on previous experiences and use that knowledge for continuous knowledge construction. The knowledge constructed in one content area can be used to facilitate learning in another. The learner is always engaged and the environment provided by the teacher is dependent on the learner's current level of understanding. The Common Core standards boast that "by reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge

in these fields that will also give them the background to be better readers in all content areas" (National Governors Association Center for Best Practices & Council of Chief State School, 2010, p. 10).

Infused within this curriculum is the expectation for learners to be proficient in 21st century technology skills. Students' instruction is geared toward using "technology and digital media strategically and capably" (National Governors Association Center for Best Practices & Council of Chief State School, 2010, p. 7).

Technology in Education

Technology is a major contributing factor in career readiness and is rooted in behaviorist theory. This is an area that has been neglected in traditional classrooms until recently. With the onslaught of technological advances beyond and through the internet such as texting, skyping, Facebooking, and YouTube, students must be familiar with basic technologies to be career ready and find it appealing to experience something that is so much a part of their personal lives at school in a way that helps them to construct valuable knowledge.

Therefore, educators around the world are crusading to incorporate as much technology as possible into their daily schedules. Sometimes this takes place in authentic ways and sometimes it does not. Many educators' ideas of technology vary and sometimes students are teaching teachers how to use the technology efficiently.

The use of games and presentations are two elements of educational technology. Gaming programs are created with behaviorist attributes, while presentations are often constructed based on the learners' personal values. Both gaming and presentations are used by students in efforts to reach proficiency with Common Core standards.

Games

There is an array of websites available with games and interactive lessons that drill students on content. Most of them are formatted with behaviorism as the motivating factor. As participants choose an answer or make a "move" the computer adapts. If an answer is given correctly, the level of difficulty increases. If an incorrect answer is chosen, then the level of difficulty is adjusted to make the experience more successful or gratifying for the participant. The participant is encouraged to persevere through the process of completing the game because maximum frustration is avoided. In the end, participants are ranked according to their performance. These games are used mainly for learners that need additional "drill and practice" because they are not proficient at a particular skill or if an advanced student needs an un-facilitated experience with new content. The frequency of the use of games that follow a behaviorist model in classrooms that are driven by the Common Core and a constructivist approach creates a unique dynamic that lends itself to balancing the two camps of constructivism and behaviorism.

Presentations

Another way that technology manifests in the classroom is in the form of presentations. Teachers present information to students using Powerpoint presentations, Glogs, Prezi's, and at times communicate with their students using online blogs. Glogs are online posters that can be made interactive with links to websites and videos. A Prezi is similar to a Powerpoint presentation, yet is not static in its movement. Ideas can "bounce" around the screen and links can also be added to this medium. Blogs are online journals that allow conversations about a given topic to take place over the internet. These are all venues to organize information and communicate it to an audience. Each form of communication is tied to a specified objective constructed by the presenter. Linearly, the presenter determines the knowledge outcomes.

Since these mediums are used in the corporate world, it is logical that students are introduced to these various formats of sharing information to facilitate career readiness. Although they may not be using the same software as adults, there are sure to be some programs available that will assist in communicating relevant information to others in the future and someone will need to be prepared to program and filter the information to be distributed. The use of presentations facilitates social interaction in learning as Vygotsky (Phillips & Soltis, 2004) encourages, yet students are asked to convey their communication based on a specific objective that should be apparent throughout the presentation. This illustrates the use of constructivism to create the presentation while expecting behaviorist outcomes.

PRAGMATIC KNOWLEDGE CONSTRUCTION

In a social constructivist model, educators are admonished that students should be engaged in learning and collaborating in a respectful learning community (Bloom, 2009). As part of the Common Core Standards, students are expected to defend their arguments and problem-based learning is encouraged, as evidenced in argumentative writing expectations (Common Core State Standards, 2010). In order for these outcomes to be exemplified, personal construction of knowledge as well as organization of content and space is necessary. Active engagement is a key element to constructivist knowledge construction (Richardson, 2003). In general, definitions of constructivism allude to the idea that development of understanding requires the learner to be actively engaged as they make meaning of concepts (Ultan.r, 2012). The task of the educator is not to dispense knowledge but to provide students with opportunities and incentives to build it up" (von Glassersfeld, 2005).

Providing incentives brings to mind operant conditioning brought to light by Skinner (1969). A teacher nurtures, along with all the students in a classroom, an environment that encourages (with praise or tangible incentives) students to construct their knowledge using resources that are accessible to the learner. Creating this type of learning environment takes time and expertise from a teacher. For example, requiring a diverse group of students from several socio-cultural backgrounds to construct and then come to a consensus of an epistemological definition of schooling would require both constructivism and behaviorism.

> Students "learn in a variety of ways, which include trying to solve problems on their own, sharing their ideas with their peers, and asking the teacher to explain issues and concepts that are unclear" (Gordon, 2009, p. 48).

Some learners prefer working alone, while others learn best talking things out with a group, and still others may need to interact with things in a hands-on way. Students "learn in a variety of ways, which include trying to solve problems on their own, sharing their ideas with their peers, and asking the teacher to explain issues and concepts that are unclear" (Gordon, 2009, p. 48). All strategies can be valid means of facilitated knowledge construction. Flexibility based on the needs of students should be part of a constructivist approach and teaching may require adjustments in approaches used by the teacher (Gordon, 2009). Flexibility, as well as forward thinking on the part of the teacher is necessary in managing this process of learning. The teacher must be prepared to smooth over objections and disagreements and teach students how to respond positively when they experience the conceptual imbalance that happens and may make students feel uncomfortable as though the teacher is not doing their job to clarify concepts in order to invoke true learning (Gordon, 2009). Modeling student behaviors in this learning environment that benefits individuals

and helps the classroom community progress can be supported by operant conditioning to dispel behaviors that may hinder the progress of the group (Bloom, 2009). It takes a professional to walk the tight rope allowing students to construct meaning while exhibiting behaviors that do not negate the knowledge construction of others. I may learn best by talking through content, yet talking loudly is not an acceptable behavior in my learning community because it hinders those around me that need quiet introspection to formulate their understanding.

The peer groups of urban students strongly impact their social lives (Moore & Lewis, 2012). Therefore, it becomes very important for teachers to foster a classroom community that discourages ridicule of academic mistakes and empowers students to work together to correct errors. "Along with clear and shared expectations of behavior, students need to feel comfortable enough in the classroom to take risks" (Bloom, 2009, p. 145). Modeling correct behaviors, having class discussions to discuss appropriate behaviors, and analyzing non-examples of appropriate responses to situations help to foster a positive, proactively disciplined community (Bloom, 2009).

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The Common Core State Standards (2012) stress the use of evidence to support conclusions. Providing evidence for one's assertions can become increasingly complicated. As ideas become more abstract and complex, verifying presumptions within the realm of those ideas become more complicated also. It becomes necessary to state background knowledge used to come to a conclusion. One new thought is the conglomeration of several past experiences with a set of information (Wells & Chang-Wells, 1992). Sharing your ideas involves sharing your perspective in a way that others can attempt to understand. Even the student processing information at the highest level may have difficulty communicating the meta-cognition that has taken place, especially if the student is an elementary school-aged learner. This expectation takes you beyond Piaget's proposed realm of knowledge construction for young children (Dixon-Krauss, 1996). Therefore, such communication may begin as a teacher-led experience. Knowing that the item indicated is an apple and explaining how you "know" it is an apple requires different levels of knowledge construction. Developing communication skills is a social activity and is key to academic and social learning in the classroom (Bloom, 2009). It is necessary for students to have an example of such a task to eventually become independent. The type of behaviors expected, would be the behaviors modeled.

ORGANIZATION OF KNOWLEDGE

In the 21st century there is no shortage of information. What is lacking are ways to organize the immense amount of information available into relevant pockets of knowledge to be used in task completion or goal achievement. In urban schools students are asked to process new information, yet are not always provided a means for making the information relevant to them and available for recall in the appropriate situation, especially in the areas of math and science (Moore & Lewis, 2012). Oftentimes, students' school supplies are not even organized in a fashion that allows them to put their hands on the appropriate tool at the appropriate time. Providing students with tools to organize their space and information facilitates the process of making connections to previous knowledge and simplifies the knowledge construction process (Gordon, 2009).

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Teaching students how to use tools to organize information gives them the opportunity to connect prior knowledge to new material so that new knowledge can be constructed. The process of relating prior knowledge to new constructs could be facilitated without teacher input, but there is no guarantee that each student would be successful with implementing this organization process within the time parameters of the urban classroom. Modeling appropriate outcomes makes the goal of total class implementation more realistic (Bloom, 2009).

As urban students move to constructing knowledge in authentic ways like with project-based learning activities, it becomes necessary for them to plan and organize their timelines for work completion and the execution of the same (Newell, 2003). This type of planning and organization takes direct instruction and may also involve modeling.

> Once organizational strategies are learned, they can be applied to various content areas. The subject matter may change but the process of gathering, organizing, and learning new information is constant. While the product of a project is certainly important, we value the fact that children "learn how to learn" and develop tools necessary to learn "anything about anything." (Diffily & Sassman, 2002, p. 89)

Leading students toward behaviors and academic procedures that have traditionally lead to success in a content area provides students with a basic framework by which they can alter portions of what they are presented with to fit their personal preferences and knowledge construction needs. This point is validated when the authors in Moore and Lewis (2012) "contend that too few bridges connect the established scientific content and culture in what students already experience and understand in their everyday lives (p.186). Moore and Lewis (2012) also highlight the mathematical needs of urban students and the importance of real-world connections and applications to learning mathematical content. Building content bridges and establishing academic frameworks to serve as foundations for knowledge construction is applicable for all subjects (Echevarría, Vogt, & Short, 2010).
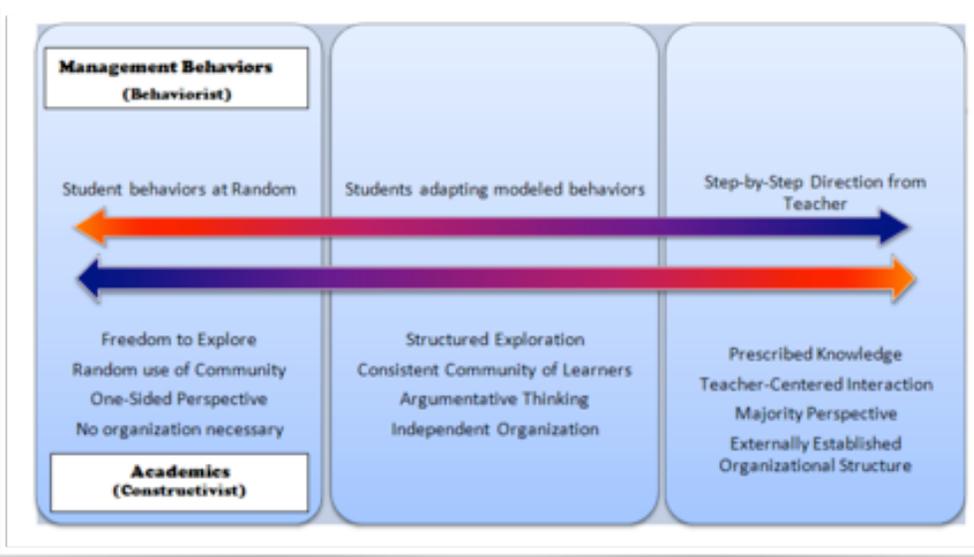
Teaching students ways to engage in knowledge construction in a communal way, exemplifying ways to communicate thinking, fostering a community that is supportive of exploring new ideas in an environment free of ridicule, and presenting options for organizing space and information that work within an urban classroom can benefit learners (Bloom, 2009). These behaviors are key to boosting knowledge construction in urban public schools in a constructivist fashion (Wells & Chang-Wells, 1992). It is important for educators to see the value in replicating these behaviors in their classroom to the benefit of all learners.

The continuum below, like Golding's (2011) *Many Faces of Constructivist Discussion Continuum*, characterizes how teacher input and student independence determine the propensity for constructivist knowledge construction. *The Management Behaviors vs. Academics Continuum* (Table 1) illustrates behaviors that once modeled, can be implemented in a continuous way to maximize students' opportunity to eventually construct knowledge freely. As independence toward constructivist outcomes increases (academic behaviors), appropriate domain-specific behaviors tend to be more concrete for the learner. Students that require the most teacher support for learning participate in direct instruction. They are mimicking the teacher-relayed behaviors. Those that are able to freely construct knowledge have internalized how to construct new knowledge based on prior experiences. Within these two extremes are a continuum of learning behaviors and academic levels of exploration. These ideas are exemplified in the chart below. Students that independently construct knowledge have a greater depth of understanding of appropriate learning behaviors for knowledge

construction and those that still need reinforcement of concepts participate in more teacher-directed knowledge construction activities. Students are able to handle more academic knowledge construction freedoms as they prove that they can consistently accumulate academic knowledge without teacher intervention. It is necessary to contend that students that operate in the most extreme lane of the continuum and function randomly, without organization may find themselves ultimately academically inefficient. Balance between the two is preferred for optimal learning.

Table 1. Management Behaviors vs. Academics Continuum

within concepts once a foundation has been established. They are then able to discuss these concepts in a collaborative framework because an appropriate structure has been modeled for them. Therefore, students are able to freely construct knowledge once they have acquired background knowledge and an appropriate structure. Without this structure, even though educators expect students to construct knowledge, they are unable to do more than scratch the surface of academic disciplines. Knowledge construction in urban classrooms should include the thought processes of constructivism exemplified by academic behaviors transmitted through the behaviorist characteristics of direct instruction and modeling.

CONCLUSION

In the American culture, citizens operate under the premise of freedom of choice and free enterprise. Despite this freedom, there is still a basic structure (our rules and laws) that people have to abide by in order to exert this freedom. Vygotsky explored how social environment and culture impacts an individual (Phillips & Soltis, 2004). Combing Vygotsky's emphasis on social learning and Skinner's ideas about positive reinforcement can lead students to success in the urban classroom.

Students can begin to make connections

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