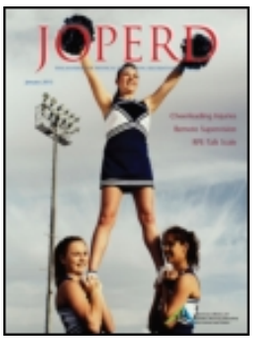

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Getting it Right from the start

Employing the Universal Design for Learning Approach to Your Curriculum

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Getting it Right from the Start: Employing the Universal Design for Learning Approach to Your Curriculum

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Universal design for learning means planning ahead for the inclusion of all students.

Fernando is in sixth grade and has Down syndrome. He is in a class with Angelica who has a visual impairment, Justin who has exercise-induced asthma, and Valinda and Valerie who recently moved to the United States from Russia. Valinda and Valerie speak little English and have limited experience with most games and activities that are played in the United States. Their teacher, Mrs. Schedlin, developed her lesson plans for the hockey lead-up unit that included the lesson warm-up, the lesson focus, a game, and then closure. This year, she had these five students with unique needs, as well as others with various abilities. She added modifications at the end of her lesson plan, such as using a Frisbee instead of a puck for Fernando, having a trained peer-tutor and a beeping ball for Angelica, using stations with specific task analysis for Valinda, Valerie, and Fernando (and supporting these students with two paraeducators).

The first lesson of the unit looked like chaos. All the students were involved in activity, and Mrs. Schedlin ran around between instruction to give out additional equipment to other students who also wanted to use the Frisbee or beeping ball for hockey. She only had enough of the "alternative equipment" for the students who "needed" it. Mrs. Schedlin then realized that some students did not even have previous experience with hockey, and she had to re-think her lesson. By the end of lesson six, several students had created their own game in a corner of the gymnasium; two students were having a sword fight with the hockey sticks; Valinda and Valerie were batting a ball back and forth like baseball; Justin and three others were throwing and catching the Frisbee; and Fernando and Angelica were on the floor with a paraeducator rolling the beeping ball to each other. Mrs. Schedlin was beside herself. Where did she go wrong?

Mrs. Schedlin called the adapted physical education consultant for the district, Ms. Collier, who came to observe Mrs. Schedlin's class. Ms. Collier commented that Mrs. Schedlin had the right ideas, but delivered the lesson in a reactionary way. Ms. Collier said that many teachers are taught to include individuals with differences as an afterthought. She encouraged Mrs. Schedlin to think of all the needs of the students and identify the objectives of the lesson before planning it to include all students.

Above: Teaching assistants paired with individual students give guidance with short pieces of yellow rope, an example of providing appropriate support for the needs of the students.

At the next class, Ms. Collier had a lesson plan for each paraeducator working with the children, so they knew what to do and knew the objectives that were to be accomplished. She offered several Frisbees as optional pucks for hockey, a variety of balls—including several beeping balls if Angelica or others chose to use them— and some pucks and smaller balls. She also made plastic sticks, pillow polo sticks, and wooden sticks of different sizes available to everyone. Each skill was described in words and pictures at stations, and the students all worked in pairs. The warm-up was clear, as was the focus of the lesson. Passing, dribbling, and shooting were broken up into separate stations, and the paraeducators coordinated and ran two stations each, while Mrs. Schedlin rotated around the class and gave feedback. Each station had a hierarchy of goals, so students stayed focused and kept track of their performance. This was much more inclusive, and it challenged the students at their own ability level.

The above scenario is a true story and one that many teachers are familiar with. Many professional preparation programs have taught their future teachers to develop a lesson and add modifications at the end of the lesson plan, often as an afterthought. In many cases the student with a disability is not included until the middle of the lesson if at all (Block, 2007). In addition, the students with disabilities often feel left out, and their peers see them as not included and different (Tripp, Rizzo, & Webbert, 2007). Modifications made after the lesson also do not take into account students with different needs who do not have the "label" of a disability (Thousand, Villa, & Nevin, 2007).

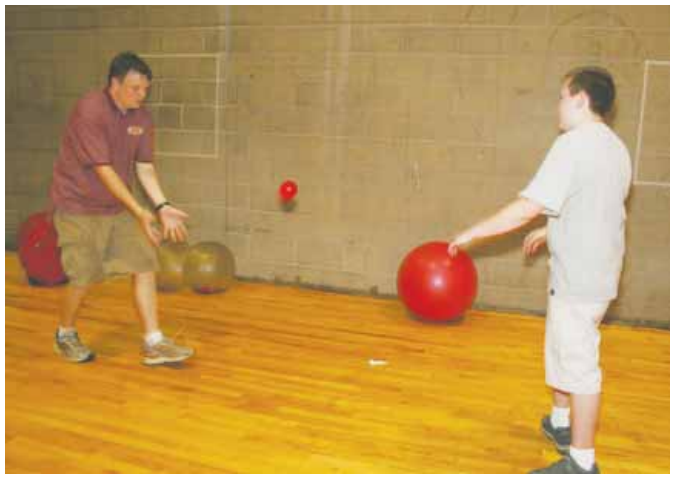
The purpose of this article is to encourage the use of the universal design for learning approach to ensure the successful inclusion of all students from the beginning of the lesson to the closure. Table 1 provides information on the benefits of expanding lessons to make them universally applicable for learning.

Universal Design for Learning

The universal design for learning approach (UDL) emerged from the field of architectural design when federal legislation required universal access to buildings and other structures for individuals with disabilities. Architects began to design accessibility into buildings during their initial design stage rather than retrofitting standard structures. For example, a curb-cut gives access to the sidewalk for a person who uses a wheelchair, while also making travel easier for individuals using walkers, parents with strollers, bicycles, or older people who have trouble negotiating curbs. To take another example, closed captioning on televisions helps individuals who are hard of hearing or deaf to follow what is happening, but it also helps people in a noisy room, or individuals who cannot hear the sound because the volume is turned down (Spooner, Baker, Harris, Ahlgrim-Delzell, & Browder, 2007). In New York, the Department of Environmental Conservation embraces the philosophy of universal design. This agency takes the stance that accessibility is an integral part of new projects, not an isolated special accommodation feature (Fraser, & Verschoor, 2005). They promote access by making areas such as trails, camping facilities (including grills and campfire pits), picnic tables, bathrooms, and fishing piers accessible to all.

Table 1. Benefits of Employing the Principles of Universal Design for Learning

- Motivates all students to participate
- Includes all students in all activities
- Reduces management time for teachers
- Increases learning
- Increases acceptance of children with disabilities or differences by their peers
- Provides full access to content for all
- Reduces frustration during the lesson for students and teachers



A trained paraeducator works with a boy in a throwing-and-catching exercise. The range of ball sizes available makes it possible to find one that is developmentally suitable.

Using this architectural principle, UDL is a strategy to eliminate barriers to learning that students may encounter, and it includes universally designed instruction (UDI), universally designed curriculum (UDC), and universally designed assessment (UDA; Meyer & Rose, 2000; Rose & Meyer, 2002). Another example is the application of the universal design principle to reading. By creating a book on a computer first, the publisher can choose a DVD output, large print, Braille, small print, or an audio version. This initial medium lends itself much better to including all readers, as opposed to starting with a printed book and creating the other media as an afterthought.

Imagine a learning environment where all students are engaged and challenged at a level that meets their learning needs; where content is presented in multiple ways and with multiple methods; and where diversity is celebrated and creativity encouraged. Would this not be a fun and exciting place to learn? Perhaps this describes your own classroom. Universal design in education means that the physical, social, and learning environments are designed so that all students' learning is supported (McGuire, Scott, & Shaw, 2006). Univer-

A stuffed sock hanging from a string substitutes for a ball in this throwing activity geared to the student's needs.

sal design is a concept, a set of principles, a framework, and a frame of mind that supports access for the widest number of individuals (Odem, Brantlinger, Gersten, Thompson, & Harris, 2005). Universal design is not achieved through uniformity but rather through flexibility and creativity. Universal design for learning is a framework that provides alternatives for methods of instruction, delivery of instruction materials (equipment), and student responses (how students show what they can do)—all within the general curriculum for the benefit of every student, regardless of his or her specific areas of diversity (Rose & Meyer, 2002).

A More Inclusive Environment. Universal design for learning is a more efficient way to provide students with access to the curriculum. The concept considers the range of users' abilities in the design stage of the curriculum, and incorporates accommodations before starting instruction. This built-in access for a wide range of users with or without disabilities is the underlying principle in universal design.

In terms of curriculum, universal design requires instructional materials and activities that allow learning goals to be reached by individuals with a wide variety of abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage, and remember. Such a flexible, yet challenging, curriculum gives teachers the ability to provide access to physical education to each student without having to repeatedly adapt the curriculum in order to meet individual students' needs. Tools and materials that meet the standards of UDL help students learn by getting them interested and making them feel successful and good about the work they are doing. These tools and materials support students' motivation to learn by offering multiple ways to engage in the task at hand, thus enabling students with different preferences and styles to find an avenue that suits them (Meyer & O'Neill, 2000; Thousand et al., 2007). For example, in the scenario at the beginning of this article, Mrs. Schedlin offered the students a variety of hockey sticks, balls, Frisbees, pucks, and levels of performance outcomes, as well as different levels of instruction.

Fit the Activity to the Child. With the universal design for learning philosophy in place, Fernando and Angelica would have been automatically included in class from the beginning of the school year, and modifications for them would not have been an afterthought. The ability level and objectives of *all* the students would have been considered before instruction, and all the units would be designed to fully include everyone.

Considerations Before Implementing UDL

The three major variables that must be considered before implementing UDL are (1) the attributes of all students in the class, (2) the objectives of the class and of individual students, and (3) the modification variables.

Attributes of the Students. As can be seen in Mrs. Schedlin's class, children with and without disabilities will possess different attributes (including intelligence, sight, ability to breathe, motivation, knowledge, and experiential background), which must be considered before a lesson can be developed or implemented. When analyzing the attributes of students, it is imperative that the instructor looks at the functional ability of all children. In order for function to be determined, the instructor must assess each child at the beginning of the year.

Objectives of the Class and of Individual Students. In each class, the teacher has objectives for a specific lesson and for the unit being taught. In some cases these objectives align with the national or state standards, and they may also be driven by the needs of the class as a whole. The teacher must consider the class objectives when planning a lesson, as well as any student's individualized education program (IEP) objectives (Kowalski, Lieberman, Pucci, & Mulawka, 2005). These overall goals must be considered while planning the lesson.

Modification Variables. In any given lesson, there are many ways an instructor can make modifications to include all students. By considering the underlying requirements of a task presented in a lesson, the teacher can create modifications and variations to meet the needs of all students. The functional approach to modifying movement experiences (FAMME) can serve as a guide to determining appropriate modifications.

The FAMME Model

The FAMME model is a noncategorical approach (not based on disability labels) to creating modifications for lessons in order to enhance the learning of all students regardless

of their ability level (Kasser & Lytle, 2005). This approach involves four simple steps that can be easily implemented by any teacher to create UDI.

Step 1: Determine the Underlying Components. All tasks require some level of ability related to the individual student. Individual student components include strength, flexibility, balance, coordination (eye-hand, eye-foot), speed/agility, endurance, concept understanding, self-responsibility, attention, and sensory perception. Each task or activity requires various degrees of these components. For example, catching a ball requires a high level of eye-hand coordination but little endurance. Conversely, running a lap requires endurance but little eye-hand coordination. Many games and activities require multiple components, and variations can ensure success for all students. In the scenario at the beginning of this lesson, Mrs. Schedlin is teaching a hockey unit. Hockey requires eye-hand coordination, endurance, speed and agility, concept understanding, sensory perception, and some degree of balance, flexibility, and strength. All these components are required to varying degrees in order to play hockey.

Step 2: Determine the Students' Capabilities. The next step in the process is to determine the students' capabilities related to the underlying components. Good teachers assess students early and on a continuing basis, and this gives them a general understanding of their students' abilities related to the components necessary for the task or skill.

Step 3: Match Modifications to the Students' Needs. In this step the teacher will create variations to all the tasks within a lesson to accommodate students with a range of skill levels. In this way a student with any ability could walk into the class at any time and be able to participate fully. For example, to accommodate various abilities of eye-hand coordination, Mrs. Schedlin has provided short-handled pillow polo sticks, plastic sticks, wooden sticks, beeping balls, nerf balls, large pucks, small pucks, and small balls. The variety of equipment allows for many levels of eye-hand ability, and each student can choose the implement and ball or puck that he or she needs to be successful.

Another example is to consider the level of attention and self-responsibility of each student. Variations for these skill components can include the use of instructional assistants to cue and assist students to stay on task, peer helpers, visual and written task directions, independent station work, or mini games. These variations can happen simultaneously so that all learners get the support they need. This process of matching modifications to the students' needs is done for each of the underlying skill components required for the activities of the day. When teachers analyze these aspects of a lesson *before* it is presented, all their students should be able to walk into the class and be successful.

Step 4: Evaluate Modifications. The last step is to evaluate the effectiveness of the variations and modifications for access to all students. Perhaps some components did not meet the needs of the highest-level achiever, or perhaps an underlying component was not accommodated. When this occurs, modifications can be added for the next time the lesson is presented. For example, perhaps the teacher forgot to create a variation for balance in the hockey lesson. She might then add such variations as striking from a seated position, while holding the wall, while holding a partner, while using a sport wheelchair, while walking, while running, and while running with an opponent. The teacher can build in these kinds of variations to meet the ability level of all students.

Having a variety of equipment available gives these boys more choices in a batting exercise.

FAMME in Action

Tamiqua, a ninth-grade girl with a spinal cord injury, was a new student in Mrs. Schedlin's class. She showed up during third period, and Mrs. Schedlin knew nothing about her. She had only heard that she might be getting a new student that day. Tamiqua's disability had resulted in some paralysis of all four of her limbs. She is able to move her arms up, down, and to the front, and she has some grip strength. She uses a wheelchair to ambulate and can move her chair independently. Because Mrs. Schedlin's lesson met the requirements of UDL, she already had equipment and variations that would enable Tamiqua to participate fully in the lesson. Tamiqua used a plastic hockey stick and nerf ball, since they are lighter. She was partnered with a peer to participate with throughout the day so that she could begin to get to know other students in the class. Since students in Mrs. Schedlin's class were used to serving as both learners and teachers (used frequently in the reciprocal style of teaching), this was a natural event and did not make Tamiqua feel singled out. In fact, other students were working with partners as well.

As this scenario illustrates, a few minor variations in a lesson to make it UDL can greatly improve the opportunities available for students of all abilities. The UDL modifications of a later tennis unit led Tamiqua to begin playing tennis, and there is no limit to how much she can improve on her upper-arm strength, mobility, and speed—and thus her tennis game.

Employing the Principles of UDL

The following three sections include lesson variables that can be adapted to support various levels of underlying functional abilities. These variables, or modifications, fall into three areas: (1) equipment, (2) rules, and (3) instruction.

Equipment Modifications

Equipment modifications are sometimes necessary to make a particular student more successful. Individuals with unique

Children in a swimming unit can be assessed using various supports, such as these noodles.

needs may require adapted equipment for a number of reasons, including limited mobility, limited grip strength, lack of vision or hearing, decreased cognitive function, or limited attention. Examples of equipment modifications include the use of shorter or longer rackets, beeping balls, guide wires, Velcro mitts, or softer balls. It is important to remember that the equipment should be age-appropriate and that some equipment is more conducive to use by all students than other equipment. For example: a volleyball trainer (developed through Sportime) can be used by more students in a class than a traditional volleyball. A scarf can be used to juggle more easily, and by more students, than a ball. However, students who are ready for more challenging equipment should be provided with the appropriate tools to enhance their skills and maintain motivation. One student who had a spinal cord injury was an avid juggler. He did not want to use scarves because they were too easy for him. During the juggling activities, he practiced with clubs and then demonstrated the use of juggling clubs and Chinese yoyos for the class.

Rule Modifications

A rule modification is anything that deviates from the original or culturally accepted rules of a game. The instructor must create an atmosphere of flexibility among all participants. There are many ways to play a game, and with the diversity in classes today, it is important for all players to be open-minded. Students with a variety of abilities may need adapted rules in order to be successfully included. Examples include slowing down the pace of a game, allowing more chances, taking away rules, removing the role of the defender, limiting or adding responsibility, giving one-part commands, and making sure all players are involved in play before a team can score (Lieberman & Houston-Wilson, 2002). Teachers must keep in mind that children are not miniature adults. It is not always beneficial to "water down" an adult sport and expect it to be appropriate for children (Housner, 2000); instead, one should ensure that all activities are developmentally appropriate. Sometimes a teacher may want to change a task completely for some individuals rather than modify the rules. For example, some students may be allowed to throw the ball in a game instead of striking it (Rink, 1998), or the distance between the bases and the number of bases may be modified.

An example of a modified baseball game for elementary or middle school students that meets the needs of all learners is "Off the Wall Baseball," which is played with plastic bats, tees, wiffle balls, and nerf balls. The team at bat lines up on the third base line, with sufficient spacing so they do not hit one another. Each player then tosses up the ball and hits it, hits off a tee, or rolls the ball, all at the same time out into the gym. There are no boundaries and no outs are used. The entire team then runs around all the bases at once while the outfield team tries to retrieve all the balls and place them in a bucket at the "pitchers mound" before all the runners get around to home plate. Points can be awarded for the number of bases all players cross or for each complete round to home. Teams then switch places.

Modifications to rules in many cases are natural when keeping the UDL principles in mind. Rule modifications can support variations in the underlying components of skills, such as strength, coordination, speed and agility, balance, concept understanding, and endurance. The significant rule modifications in "Off the Wall Baseball" increase accessibility for all students to be successful. For some children, inclusion in a game with traditional rules would be impossible. Physical educators must consider alternative rules to ensure the inclusion of all children in general physical education.

Instructional Modification

Below are examples of instructional methods that employ the principles of universal design. Applying these strategies can make class content accessible to students with a wide range of abilities.

1. *Inclusiveness*. Create a classroom environment that respects and values diversity. Avoid stigmatizing or segregating students.

2. *Physical access*. Ensure that classrooms, gymnasiums, fields, pools, and courts are accessible to individuals with a wide range of physical abilities. In addition, make sure that there is a wide range of options related to equipment use, such as a variety of racquets, balls, bats, flotation devices, mats, or other equipment.

3. *Delivery modes*. Use multiple modes of delivering content. Alternative or multiple delivery methods such as demonstration, posters, use of paraeducators, discussions, explanations, videos, and hands-on activities can be used. Make sure each is accessible to students with a wide range of abilities, interests, and previous experiences.

4. *Interaction*. Encourage different ways for students to interact with one another and with the teacher. Examples may include class questions and discussions, group work, demonstration, routines, or station work.

5. *Feedback*. Provide effective prompting during an activity and feedback after an assignment is completed. Feedback may be given verbally, visually, in written form, or as physical

guidance to help students understand the activity.

6. *Demonstrate knowledge.* Provide multiple ways for students to demonstrate their knowledge and skills. For example, besides traditional tests, consider group work, demonstrations, routines, station work, portfolios, and presentations as options for demonstrating knowledge and understanding.

With any of these instructional modifications, multiple methods may be used in a single class or unit of instruction. Teachers have many variables they can change, adapt, and modify when teaching a lesson. Teachers can also modify the way they instruct a class, a small group, or an individual.

In order to implement a UDL approach, instructors must take on some important responsibilities. Table 2 provides information on the responsibilities of the instructor. Teachers may want to consider adding some of these teaching strategies to help them make their UDL approach effective.

Modifications to Match the Needs of Students

The ability of a teacher to create modifications based on students' underlying capabilities is critical to the FAMME model. For example, in the scenario at the beginning of this article, if the equipment, rules, and instruction had not been not modified, Fernando would not have had as many sports, games, and activities available to him. Fernando, the youngster with Down syndrome, has added hockey to his repertoire of sports and games. He now knows how to play the same games as his peers and even has the option of participating in this activity on the playground or in community recreational leagues. Fernando has the same options available to him as his peers and can be a self-determined young man as he grows up. His self-determination will empower him to make decisions, advocate for himself, and have a better quality of life. Figure 1 provides a checklist of basic principles for the implementation of the UDL philosophy, which will allow a child to participate in a game, activity, or sport with his or her peers.

Summary

The UDL approach to teaching, a method to create access for all students, can be extremely effective when adequate time, energy, and creativity are spent to apply it. Three variables must be considered when designing a UDL lesson: (1) the attributes of the students, (2) the objectives of the lesson and individual students, and (3) modification variables. The FAMME model presents a simple and easy way to assess the skill components of lesson tasks or activities and then to create variations based on underlying components of skills, such as strength, flexibility, eye-hand coordination, or attention. Many aspects of a lesson can be modified to create variations for differences in skill. Such areas of modification include equipment, rules, or instructional variables. The result of expanding access in lessons is an environment where everyone can learn. As teachers continue to evaluate their programs and lessons for UDL, all students will be successful.

Acknowledgement

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Table 2. UDL Principles as an Ongoing Philosophy

Responsibilities Before Class	Responsibilities During Class	Responsibilities After Class
Thoroughly assess the functional abilities of all students.	Instruct to all levels of performance.	Assess the effectiveness of instruction.
Train paraeducators.	Use paraeducators effectively (Piletic, Davis, & Aschemeier, 2005).	Obtain feedback on the lesson from paraeducators.
Train peer tutors.	Use peer tutors effectively.	Evaluate effectiveness of peer tutors and give them feedback (Lieberman & Houston-Wilson, 2002).
Obtain a variety of equipment for each unit.	Ensure that each student has the type of equipment he or she needs to be successful. Allow students to participate in this decision.	Review equipment options and determine whether more or fewer modifications are needed.
Create rubrics with various levels of performance.	Ensure that each student has access to the rubrics related to the current unit.	Record student performances on each rubric to determine the level of instruction for the next class.
Identify modifications to rules and activities to support differing ability levels.	Monitor the success of modifications and adjust them as needed during the lesson.	Assess modifications and activities for the next lesson.
Determine instructional variations to support learners.	Evaluate instructional variations.	Determine effective variations for next class.

Figure 1. Universal Design for Learning Checklist

The following checklist outlines the strategies used in order to provide an inclusive program in which all students can be successful. The checklist can be modified to fit the needs of the individual student and teacher.

Inclusiveness

___The classroom, gymnasium, pool, field house, and other teaching areas are environments that respect and value diversity.

___Multicultured activities and games are introduced and taught to reinforce diversity.

___Activities are done as a whole, not segregated.

___Modifications are to the games, not to the individuals, to allow success for all students.

___ Students are taught without any stigmatization.

Physical Access

___Students have access to all areas, including pool, playground, locker rooms, bathrooms, gymnasium, field house, and entryways.

___Hallways and entryways allow students using a wheelchair to be able to move around easily.

___Quiet areas are available for rest or therapy.

___Proper signage is posted, including braille, large print, and bright colors.

___Noise levels and wall displays are monitored so that students with sensory impairments can participate without interference.

___A wide variety of equipment is available, such as racquets of different sizes, textured balls, different colored bats and bases, a variety of sizes and shapes, mats, pool flotation devices, oversized equipment, and modified equipment.

___Students are allowed choices and free movement.

Delivery Modes

___Trained paraeducators can assist in delivering material (Lieberman, 2007).

___Sensory cues such as sign language, music, or visual cues (pictures, posters, or videos) can be used.

___Train students for and implement a peer-tutoring program.

___Use computer technology.

___Model proper behaviors.

___Use a variety of instructional styles.

Interaction

___Students are encouraged to interact with one another and adults.

___Students are encouraged and feel safe to overcome anxiety and attempt something new.

___Students are supported to become aware of their own physical and health limitations and can advocate for themselves at appropriate levels.

___Students are able to give and accept verbal support.

___Students are taught to demonstrate sportsmanship and game etiquette.

___Students demonstrate appropriate behavior in games.

___Students participate in conflict resolution.

Feedback

___Provide repetitive practice and feedback during teaching time and game time.

___Use authentic assessments: rubrics, checklists, and standardized testing.

___Use multiple methods of feedback, including verbal, visual, written, or physical guidance to assist in providing knowledge to the student about his or her performance (Lieberman, 2007).

Multiple Ways to Demonstrate Knowledge or Skills

___Group portfolios
___Activity or routine
___Group presentation or work
___Standardized testing
___Repetitive practice
___Creation of lyrics
___Drawing or painting
___Picture portfolios
___Verbal tests

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