INTERACTIVE AND VIDEO INFOGRAPHICS: SUPPLEMENTAL TOOL IN TEACHING ALPHABETS

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ABSTRACT

This study aimed to develop a tool for teaching letter sounds. This study is delimited to Grade 1 pupils who were starting to learn the letter sounds. The researcher reviewed and analyzed published studies about letter sounds. Through this research, the parts and strategy of teaching letter sounds were discussed mainly: the mouth should properly emphasize how the letter sounds should be done, and the letter sound correspondences should be taught one at a time. When teaching, letters that look similar and have similar sounds, like c and k, b and d, should be separated to avoid students' confusion. As much as possible, use varied learning materials that can be used in teaching letter sounds. The tool was called INTERACTIVE AND VIDEO INFOGRAPHICS.

Keyword: *alphabets, interactive, letter sounds, supplemental tool, video infographics*

1. INTRODUCTION

Teachers have had to deal with introducing technology into the classroom because it has become a significant part of children's lives. Many experts think that students should be exposed to technology beginning in elementary school and that it can help students improve their academic understanding (Zucker, 2018). Schools must continue to incorporate technology into the curriculum. In their work, Collins and Halverson point out that many adults rely on technology (Collins & Halverson, 2009; Plowman & McPake, 2013).

Supplemental resources are advantageous to students. It can increase their interest in a particular topic. It assists students in staying current in their field. Teachers can include supplemental resources to assist students who may require remediation to be successful (Nova Southern University, 2022). Teaching and learning have benefited greatly from multimedia technologies. Videos are a tool for involving the student's verbal (linguistic), visual (spatial), and musical (rhythmic) intelligence in the learning process, particularly in self-learning (Gardner, 2000).

The newest generation of students currently filling the classrooms uses technology daily. They have grown up with computers with the Internet, and now mobile phones with Internet access. The way that these students learn has changed with these technologies (Cirillo, 2012). Students' access to extra teaching materials is becoming more common as computers, tablets, and smartphones become more common in our culture (Valentine and Bernhisel, 2008).

The COVID-19 pandemic is swiftly highlighting the importance of online education in teaching and learning. Teachers can utilize online learning as a strong instructional tool by incorporating technology into existing curricula rather than treating it purely as a crisis-management tool. Digital learning tools used well in the classroom can promote student engagement, assist teachers in improving lesson planning, and facilitate personalized learning. It also assists pupils in developing critical 21st-century abilities. Virtual classrooms, video, augmented reality (AR), robotics, and other technology tools can not only make the class more interesting but can also help teachers collect data on student performance by creating more inclusive learning settings that stimulate cooperation and inquisitiveness. However, it is crucial to remember that technology is a tool for education, not an end. What educators do with technology and how they use it to best support their students' needs is where the promise of educational technology lies.

2. REVIEW OF RELATED LITERATURE

A variety of circumstances influences a child's effort to learn the alphabet. It is crucial to remember that pupils have different learning methods while teaching letter sounds. A combination of visual, tactile, and auditory modalities should be used to reach learners most effectively (Piasta, Petscher & Justice, 2012).

Teaching the alphabet is a far more challenging and important concept than just singing your ABCs. Years before entering Kindergarten, children begin learning their alphabet, although they may only be skimming the surface. One of the best predictors of early reading achievement is a child's understanding of the alphabet (Beaty, 2009). Children must first grasp the alphabet, which is the cornerstone of the English language before they can begin reading and writing. To crack the alphabetic code of English, children learn about phonemes (sounds), graphemes (letters), and graph phonemic (letter-sound) relationships (Tompkins, 2006).

In California, in a longitudinal study, found letter knowledge was independent of phonological sensitivity, environmental print, and decoding, and that 54% of the variation in kindergarten and first grade children's reading skills was accounted for by preschool phonological sensitivity and letter knowledge (Lonigan, Burgess, and Anthony, 2000).

A variety of letter characteristics tend to influence how easily their names and sounds are remembered. These factors include whether the letter is a consonant or a vowel, its position in the alphabet, its articulation, whether the letter is associated with more than one sound (e.g., B and /b/ versus C and /k/, /s/), the age at which the sound is typically produced, the confusability of the letter's shape or pronunciation with other letters, and frequency in print materials (Evans, Bell, Shaw, Moretti, & Page, 2016).

Today's pupils are members of the technological generation. As a result, teachers must adapt their teaching methods to accommodate new technology in the classroom. Some teachers are already observing how these extra teaching aids can help pupils learn. Even if some teachers embrace change, this does not imply that our culture as a whole is open to change (Valentine and Bernhisel, 2008). To be effective in transforming the education environment, the architects of the new education system must comprehend the imperatives of the technologies driving the changes in education society should not believe that improving schools is the only way to improve education" (Collins, 2010). Introducing interactive whiteboards into the classroom as another approach to customize instruction with extra teaching resources. Interactive whiteboards are a simple, early technique to introduce students to the concept of seeking out additional instructional aids (Lacina, 2009).

2.1 Importance of Alphabets

The alphabet is nothing more than a collection of letters and sounds. The ABCs are the foundation of language. Children must be able to recognize each letter, both in order and out of order, as well as the sounds associated with that letter, in order to become literate. Armed with that knowledge, a child is well on his or her way to reading and literacy (Mascle, 2021). Learning to recognize letters is an important element of learning to read. Without it, children have a difficult time learning letter sounds and recognizing words. Children who can't recognize letters or name them by their sounds have a hard time learning to read (Lynch, 2020). Learning the alphabet entails more than just distinguishing between letters and learning their names. It also entails understanding how alphabet letters function in writing and specific letter-sound associations (Renkel, 2002).

Alphabet knowledge is essential, but the purpose of learning the alphabet is for reading and writing (Neumann, 2006). Alphabet knowledge is a child's ability to recognize and name the letters of the alphabet (Van Kleeck, 1990 as cited by Coursin, 2012). Shayne, Piasta, and Richard Wagner (2010) defined alphabet knowledge as a "child's familiarity with letter forms, names, and corresponding sounds as measured by recognition and, production and writing tasks." When alphabet knowledge is inadequate in preschool and kindergarten, these students are more likely to be labeled with a reading disability and struggle with learning to read (Gallagher, Frith, & Snowling, 2000; O'Connor & Jenkins, 1999; Torppa, Poikkeus, Laakso, Eklund, &Lyytinen, 2006). These students are at risk of falling susceptible to: being behind their peers in reading acquisition which in turn creates gaps in reading comprehension, spelling, reading fluency and vocabulary skills (Stanovich, 1986; Torgesen, 2002).

While both outside-in and inside-out pre-literacy skills are important, research on school-age children shows that inside-out pre-literacy skills, specifically alphabet knowledge and phonological awareness, have the strongest relationship with later reading ability (Lonigan et al., 2000; Wagner, Torgesen, Rashotte, Hecht, Barker, Burgess, Donahue, & Garon, 1997; Storch & Whitehurst, 2002). The development of phonological awareness appears to be influenced by alphabets as well. For preschool children (Burgess & Lonigan, 1998) and children in their first years of schooling, studies have found significant correlations between letter knowledge and growth in phonological awareness (Blaiklock, 2004).

2.2 Role of Teachers in Teaching Alphabets

Teachers should be trained in alphabet instruction methods to ensure that children receive both intentional and embedded instruction in the letters and sounds of the alphabet (Piasta, 2014). Teachers should use assessment to guide their instruction of the letters and sounds rather than a one-size-fits-all instructional method for the entire class (Stahl, 2014).

Educators must begin teaching letters and sounds to children as soon as possible so that they can learn how to apply the skills in more appropriate ways for their needs. After all, literacy skills are not ends in themselves, but rather basic tools that can and should be used in the pursuit of comprehension (Illinois State Board of Education, 2013). Some letters do not require as much time to learn as others, so focusing on them for an extended period of time is exhausting and wastes time that could be spent on other letters (Piasta, 2014).

In addition, in teaching alphabets teachers should learn different modalities. First, visual or spatial pertains to the students who prefer learning through pictures, images and spatial understanding. Second, aural or auditory-musical pertains to students who prefer learning through sound and music. Third, verbal or linguistic pertains to students who prefer learning through words, using both speech and writing. Lastly, physical or kinesthetic this pertains to students who prefer learning through use of their hands, through sense of touch and their body (Gardner, 2019). When teaching alphabets especially letter sounds, these are two suggestions for the teachers . First, the teacher should use the language 'the sound of this letter represents' rather than 'the sound this letter makes' (Johnston 2004). Young children are frequently asked questions such as, ''What sound does the cat make?'' and the child will produce the sound made by the animal. In considering this explanatory language from a child's point of view, letters are not 'making' any sounds at all. Thus, teaching students the letters represent particular sounds helps to clarify instructional language (Jones, 2012). Second, when teaching young students the sound of a vowel letter, teach the short vowel sound (Jones and Reutzel 2012). This is easier for young students to understand and remember than the 'long or short vowel sound,' which can be taken quite literally by students (Jones, 2012).

2.3 Reasons Why Learners Struggle in Learning Alphabets

One of the first difficulties encountered when learning a language is learning to read a new alphabet. Learning the skills of mapping symbols to sounds (phonological encoding) (Eckwall, 2001) and letter-word recognition (Jones, 2001) are critical when learning to read. However, they do not address how to acquire those skills. Those studies that do focus on letter learning concentrate on feature transfer and generalization (Byme, 2004), whether phonological encoding aids letter learning (Koda, 2001), and where the eye moves when learning a new alphabet (Koga & Groner, 2009).

Most students struggle to recognize certain letters. For capital letters, the letters that have always caused confusion among students are B, D, Y, J, M, N, P, Q, V, K, E, and W, whereas for small letters, the letters that have always caused confusion among students are b, d, p, q, g, j, v, w, u, m, and n. There are at least 11 different types of letters with similar shapes, and students must distinguish between them **(**Noordin, Punusamy, Jumaat, Amin (2013). These findings are supported by Richmond and Taylor (2014) found that the most difficult letter orientations for learners to identify are P, D, K, E, c, s, t, d, g, q, and z in their studies comparing letter difficulties. This corresponded to the data collected prior to and after intervention. The majority of participants do not recognize 12-14 letters each, accounting for nearly 58 percent of the alphabet. Because there are so many letters with similar shapes, the students have difficulty distinguishing them. Because they cannot see the different pattern in letter development, they are unable to correctly name the letters**.**

2.4 Benefits of Integrating Video Infographics

Video Infographics have been an effective medium for information transfer in today's world. In web searches, videos are preferred 53 times more than a normal website for information (Kalinia 2014). Creating an infographic video differs from creating a brochure, website, or catalogue. Rather than following standard graphic design rules when creating an information graph, focus on correct communication and communication design rules with the target audience (Delil, 2017).

The use of infographics is an important step toward developing a visual-based pedagogy. This approach is beneficial for a variety of reasons. First, for starters, it refers to different 'learning styles' or communication modalities. For example, studies have shown that some students have higher self-efficacy and even higher academic achievement. When faculty provide resources that cater to different ways of knowing, communicating, and remembering information, course performance improves (Hawk and Shah, 2007). Students who prefer

information visualizations retain material more effectively when they can see it, that is, when material is presented with illustrations and photos, slides, or other graphic forms. This means that while pictures can aid the visual learner in processing information, so can flow charts, diagrams, and, of course, infographics (Felder and Solomon, 2000). Second, using images in the classroom can be an important tool for encouraging general visual literacy among all students, rather than just a pedagogical strategy for reaching visual learners (Thomas, Place and Hillyard, 2008). Engaging learners in image creation thus aids their understanding of visual culture, or the "visual construction of the social," which is part of their often unseen day-to-day experience of the world around them (Mitchell, 2002). Finally, the creation of pictorial representations of written arguments, like the creation of arguments in a rhetoric or professional writing course, necessitates that students engage in critical analysis of the material that they are learning. As a result, designing a diagram or visual representation of an idea can actually help students engage with an argument, sharpening their rhetorical skills (Danis, 1993 as cited by Matrix, 3Queen's University, Canada & Hodson, Ryerson University, Canada, 2017).

Information graphics and visualization are an important part of information design (Cairo, 2012). Our eyes are constantly watching. They would rather look than read. If our brains had a preference, it would almost certainly be for visual information (Bellato, 2013). The most important rule in infographic animation design is that each data set is described using its own language and graphics. The reason for this is that repetitive visuals are not very effective in memory. This way, each originally designed scene will not bore the viewer and will continue to amaze them at every step (Delil, 2017).

2.5 Relevance of Cognitivist Theory in Teaching Alphabets

All cognitive learning activities are designed to challenge students to solve problems and respond to various stimuli. The goal is to get them to think about and apply problem-solving strategies without using any preparation or steps that lead to an answer. Teachers require craft activities that require students to apply logic, creativity, and close examination on the spot in order to produce an answer. Cognitive learning is based on five fundamental principles: remembering, understanding, applying, evaluating, and creating (Campos, 2021).

The fact that children interact with applications on their smartphones and tablets on a daily basis demonstrates that students are now learning using a cognitivist learning theory. The cognitivist theory promotes the learner's active participation in their learning. According to constructivist theory, in order to build our knowledge, a learner must first understand, comprehend, and apply his or her new knowledge (Cirillo, 2012). Introducing interactive whiteboards into the classroom as another approach to customize instruction with extra teaching resources. Interactive whiteboards are a simple, early technique to introduce students to the concept of seeking out additional instructional aids (Lacina, 2009).

Cognitive learning theory has always been concerned with how students process information and the best educational strategies educators can employ to promote student comprehension of the material. It is the responsibility of the educators to vary teaching strategies while keeping in mind that each student processes information differently (Orey, 2008).

3. METHODOLOGY

3.1 Research Design

This study used a pure research design. According to Fomunyam (2020), this type of research is motivated by a desire to expand knowledge and aspires to acquire knowledge with no other motive but to learn. The primary aim of this research approach is to gather information to improve one's understanding.

3.2 Research Procedure

The researcher develops a supplemental tool for teaching alphabets. Here are the steps for developing a supplemental tool. First, the researcher read articles related to using supplemental tools in teaching alphabets. According to Harris & Hofer (2009), using technology to supplement literacy learning aligns with the current debate, which emphasizes the importance of technology to supplement what is already happening in the classroom rather than changing classroom instruction based on the technology. Second, the researcher watched videos on how to create a supplemental tool for teaching alphabets, especially letter sounds. Third, the researcher develops two types of supplemental tools, namely: *Interactive infographics* and *Video infographics*. Fourth, the researcher asked a Master Teacher to check the validity and reliability of the supplemental tool. Here is some feedback from the Master Teacher. (1) The mouth should emphasize properly how the letter sounds should be done. (2) Repetition is the best way. (3) It is better to introduce letter sounds one letter per day. Lastly, the researcher improves the supplemental tool based on the feedback of the Master Teacher.

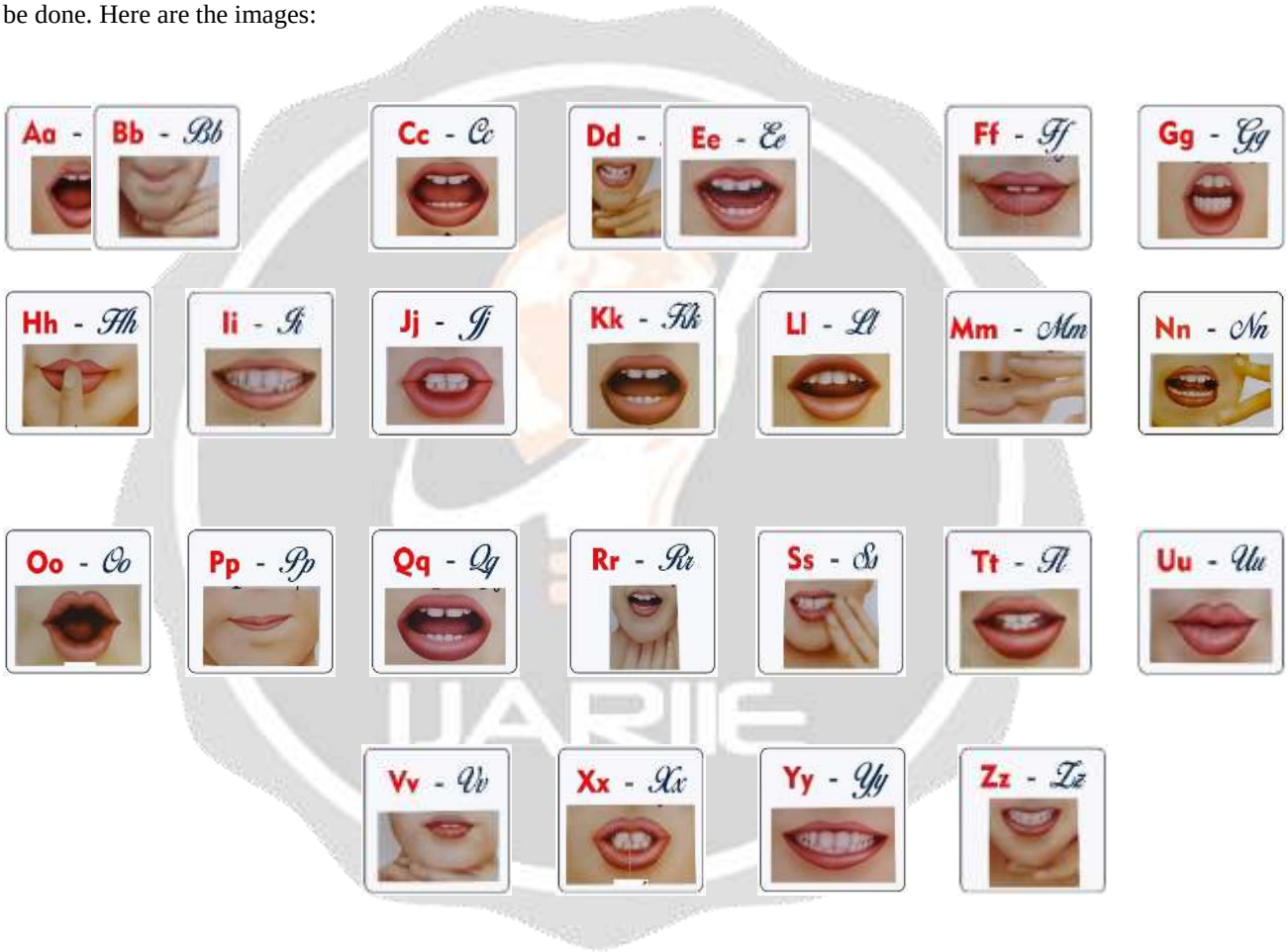
4. RESULTS AND DISCUSSION

Cognitivist learning theory is an active learning style that focuses on teaching on how to maximize the potential of the brain. It helps to connect new information with existing ideas, which improves students' memory and retention capacity. This cognition theory asks students to consider thinking and mental processes, as well as how external and internal factors can influence cognitive thinking. It is easier to learn when your cognitive processes are functioning normally.

Cognitivist Learning Theory focuses on the mind, specifically mental processes such as thinking, knowing, memory, and problem-solving, with the goal of opening the "black box" of the human mind, which is deemed valuable and necessary for learning to occur. Knowledge is viewed as schema constructions, and learning as a shift in the learner's schemata or redefining prior knowledge (Flippen, 2014).

4.1 Process and Strategy in Teaching Letter Sounds

First, in teaching letter sounds, the mouth should emphasize properly how the sounds of a specific letter should be done. Here are the images:



Second, the letter-sound correspondences should be taught one at a time. As soon as the learner learns one letter-sound correspondence, introduce a new one.

Table 1. Table and Sound Correspondences

Letter	Sound Correspondences
a	/ah/
b	/buh/
c	/cuh/
d	/duh/
e	/eh/
f	/f/
g	/guh/

h	/hah/
i	/ih/
j	/juh/
k	/kuh/
l	/l/
m	/m/
n	/n/
o	/oh/
p	/puh/
q	/quh/
r	/r/
s	/s/
t	/tuh/
u	/uh/
v	/vvv/
w	/wuh/
x	/ksss/
y	/yuh/
z	/zzz/

Third, when teaching, letters that look similar and have similar sounds should be separated to avoid students' confusion. Like for example, letters c and k, b and d. Fourth, let the learner listen carefully to a target sound presented orally. Lastly, as much as possible, use any various materials that can be used in teaching letter sounds. For example, cards with lower case letters or an alphabet board that includes lower case letters.

Furthermore, it is preferable to incorporate technology into the classroom when teaching letter sounds. Technology that will assist students in learning more about letter sounds. As an example, consider incorporating an interactive whiteboard or interactive infographics. Allow students to manipulate technology, explore, gain new knowledge, retrieve information, and so on. Aside from learning letter sounds, students will also learn how to use technology.

4.2 Parts of Interactive Tool

Interactive Infographics combine traditional infographic elements with moving elements to make the visual content more dynamic. Interactive infographics do not have to be complicated. These moving graphics could be as simple as a question flipping over to reveal an answer when a user toggles over it or as complex as allowing users to click on various elements to learn more about them.

Video infographics, also known as "animated infographics," are created by combining different animations to create an informational video that helps explain data engagingly. With the use of Interactive and Video Infographics in learning letter sounds, students will be able to know, think and memorize that a certain letter has a corresponding sound. In interactive infographics, students will be able to learn letter sounds and how to manipulate technology. Moreover, in video infographics, students will be able to learn the letter sounds by watching videos.

4.3 Parts of Interactive Infographics

This will be the first one a student sees. If the students are using a laptop, they only need to click the "forward arrow" to go to the next slide. But if the students are only using cellphone, they just need to click the "play" button.

This is the next slide, where all the letters will appear.

This is the next slide, the same as the second slide. But in this slide, students need to click a "letter".

If the students click the letter "a," this will be the picture that will appear. And by clicking the letter "a," the sounds of the letter "a" will follow if they want to go back to the third slide to click another letter, they need to click the "home" sign on the right side.

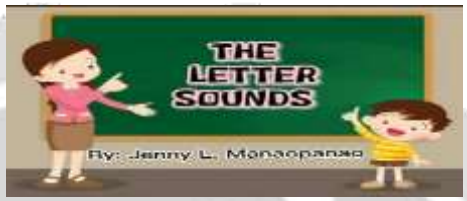
The same procedure with the letter "a".

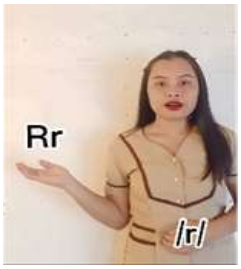
Link for Interactive Infographics:

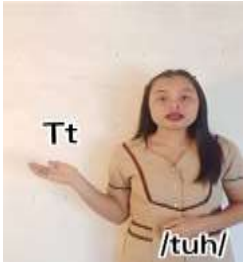
https://docs.google.com/presentation/d/15ChjvfdSpq5_7BpTUZG5njwYvk8WIlhU/edit?usp=drivesdk&ouid=111977203204071878092&rtpof=true&sd=true&fbclid=IwAR0naRGcvWA3rsc5LwnjW4j6rcpkpfPb5KAdyddmw5DPcALT3zEZaMJz8iw

4.4 Parts of Video Infographic

Video Infographic is all about letter sounds that include visible letter and sound correspondences for the learners. Here is the content of the video:







Link for Video Infographics:

https://www.youtube.com/watch?v=LkbflBSo9LM

5. CONCLUSION

Letter recognition is a fundamental component of learning to read. Without it, children have difficulty learning letter sounds and recognizing words. Children who cannot identify letters and name them using their sounds struggle to learn to read. Students at the emergent reading and writing level require explicit instruction in the alphabet and sound to improve their alphabet knowledge and phonological awareness. Using words to teach letters and sounds integrates and teaches the skills from the start.

Through this research, the process of teaching letter sounds is covered: how the mouth should emphasize properly by teaching letter sounds, each letter has a corresponding sound, better to teach letter-sound one letter per day, when teaching letter that has similar sounds must teach separated to avoid confusion.

Interactive and video infographics were created to provide a comprehensive guide for learning letter sounds. This tool is intended to help children learn letter sounds.

Lastly, the following recommendations are hereby made:

1. The use of Interactive and Video Infographics as a teaching tool by teachers in K-3 classes learning alphabets especially letter sounds. It can help p on how to teach students a letter sounds.

2. The interactive and video infographic will serve as a guide for parents to continue letter sound learning at home. At home, parents can also serve as a second teacher.

3. More research is needed to improve and optimize the tool before it can be used on a larger scale. Teachers may conduct additional research before employing interactive and video infographics in a broader context, particularly for Grades higher than one.

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