Language Teaching with Story-Logic

Joseph Poulshock
Reiko Ikeo
Munehiko Miyata

Introduction

Educators in the humanities may only occasionally use the logic of story to enhance teaching and learning, for they likely see story as something that only applies to the dramatic arts. This seems true for education in the sciences, the liberal arts, and language teaching, which is the focus of this paper. And this is a problem because the logic of story can make all learning more engaging, comprehensible, interesting, and memorable (Haven, 2014). For teaching with story-logic, we[1] must see story as more than storytelling. Because human brains are wired for story (Cron, 2012), this paper claims that we can infuse story-logic into every form of teaching, learning, and communication. That is, with story-logical teaching, we are asking the question: how can we weave the structure and principles of story into education to a logical maximum so that they saturate all aspects of teaching and learning? Thus, this paper will show that educators can infuse story-logic into the teaching of languages though the implications are much broader, reaching into the teaching of the arts, humanities, and sciences. In what follows, we will review how educators have used story for education, focusing specifically on language teaching and the research that supports it. We will look at a definition of story, a theory for using

[1] In this paper, the use of the pronoun "we" follows "classic writing style" (Francis-Noël & Turner, 2011 and Pinker, 2014) where "we" refers to writers and readers in conversation and where writers direct the gaze of readers to a reality in the world. In some cases, depending on context, "we" refers to actions that the writers undertook in doing this research.

story-logic specifically for language teaching, and a framework for implementing it. We will also examine the results of story-focused experiment, which was done for this research project.

Review of Literature

Teaching with stories has a long history. We know about Aesop's Fables for teaching morals or the Gospel Parables for teaching religious values. For modern language teaching, we can find many references using the terms "story-based approach" (Adair-Hauck & Donato, 2002; Pinto & Soares, 2012; Martínez, 2007; Donato & Adair-Hauck, 2016). We also find the phrase "story-based language teaching" (Mattheoudakis, Dvorakova, & Láng, 2007; Harmer & Puchta, 2018). And Total Physical Response (TPR) Storytelling is also well-known (Seely & Ray, 1997; Spangler, 2009; Dziedzic, 2012; Ray, 2013). These works deal with storytelling: how to teach grammar, reading, listening, speaking through stories, and though we would find it helpful to review in detail the various approaches for using story with language teaching, this work makes the following claim that distinguishes it from other works. Previous works do not succinctly define the magnetic elements of story that can make it a powerful force in education, and these works do not fully develop a story-logical theory for language education based on clear story principles, nor do they outline a framework that we can apply in virtually every area of language teaching practice. As we will see below, with story-logical teaching we have (1) a concise definition of story; (2) a clear and practical theory for using it; and (3) a planning framework in Nation's four-strands (2007) for creating story-logical methods, techniques, and lessons. Thus, we can infuse every area of language teaching with story, for example, even with traditional dialogs, dictations, grammar drills, and the teaching of expository writing and presentation skills.

But for starters, to see the broader picture, let us first look at some educational methods that share traits with story-logical teaching. These methods are case-based instruction, problem-based instruction in law, business, and medical studies, and content-based instruction in second language studies. Like story-logical

teaching, these methods place learning in meaningful contexts and thus reduce superfluous complexity and abstraction. But unlike story-logical teaching, these methods do not fully employ the principles of story-logic as we will see below.

Regarding case-based instruction, Williams (1992) suggests that educators have emphasized case-based instruction to provide meaningful contexts for learning. This goal meshes clearly with story-logical teaching to provide meaningful ways to promote language learning. The legal academic Christopher Langdell is credited with creating the "case method" in the late 1800s at Harvard Law School (Redlich, 1914). And today, we commonly see case studies in both law and business schools (Copeland, 1954; Chase, 1981). As a variation of case-based studies, medical students use a problem-based focus (Barrows, 1986).

In content-based instruction (CBI), language teachers link language learning with content learning where learners acquire language while they study a subject. We see early examples of content-based instruction during the 1960's in Canadian immersion programs (Lambert & Tucker, 1972). Mohan (1986) published the first book about content-based instruction, providing an organizing framework for developing CBI across school curricula, and Brinton, Snow, and Wesche (1989) developed three separate models of CBI: adjunct instruction, sheltered instruction, and theme-based instruction. In adjunct instruction, two classes are paired (1) a content class (e.g., psychology) with (2) a language class where the language teacher helps learners understand the content of the psychology class. With sheltered instruction, second language learners take a content class separately from native speakers, and their teachers use so-called scaffolding techniques to make content comprehensible. With theme-based instruction, learners focus on "specific themes of interest and relevance to the learners" (Snow & Briton, 2019, Chapter 1, Section 3, para. 2). With their focus on content and meaningful messages, content-based approaches relate indirectly to story-logical teaching, but in none of them do we see story-logic playing a central role.

At this point, let us look at how language educators have used and researched story for language teaching and learning. Rinvolucri (n.d.) says that story is the

language teacher's oldest technique. And of course, many scholars, teachers, and writers champion the use of stories for teaching and learning languages (Morgan & Rinvolucri, 1990; Seely & Ray, 1997; Harmer & Puchta 2018). In their excellent book, Harmer and Puchta (2018) define story, remind us that the human brain is wired for story, and they clarify how stories are culturally universal and connected to human survival. They also show us many ways that language teachers can use story in the language classroom. Nevertheless, the authors do not provide any exacting and precise definition of story; they do not provide a theory for story-logical language learning, nor do they give a planning framework for using story logic for language teaching.

In general, the research on story and language teaching lacks a clear definition and guiding theory. We can see this lack of clear definition and theory in Lucarevschi (2016) who reviews the literature of storytelling in language teaching. Lucarevschi gives no definition of story, nor a theory for using it. Likewise, Kim (2010) only gives a vague definition of story that fails to include the key elements and structure of story that make it compelling. Kim simply says that storytellers use vocalization, physical movement, gestures, and the images of a story. On the bright side, Kim's study shows that learners who had positive attitudes about storytelling significantly improved their listening, speaking, and pronunciation skills, but learners who did not have a positive attitude towards storytelling did not make the same kind of progress.

Nicholas et al. (2011) write about the power of story in the EFL classroom, but they also do not give a clear definition of story and a theory and framework for using it. The authors write about story elements such as setting, theme, plot, and resolution, but they neglect to mention the most important elements of story that make it compelling, engaging, and memorable. However, the authors claim participants in their study felt that story helped them learn language, build community, and enhance motivation. Atta-Alla (2012) did a study without a control group using a storytelling model and claims that storytelling helped learners improve listening, speaking, reading, and writing as well as general language

proficiency. Atta-Alla refers to the same teaching framework that we consider below – Nation's (2007) four-strands, and he mentions some of the benefits of storytelling that it can lower stress and foster imagination and cooperation. However, he also does not provide a theory for using story for language teaching, and he does not clearly define the elements of story that make it compelling, memorable, and effective for teaching languages.

As we can see from the above review, many authors do not provide a succinct definition of the magnetic elements of story that make it compelling, memorable, and effective for learning, nor do they provide a theory for using story-logic for language teaching. In her book, Wajnryb (2003) does state some defining features of story, which she calls narrative, but she muddles them slightly by using the abstract nouns: "orientation, complication, and resolution." Thus, Wajnryb only loosely defines what characters do in stories, and by defining story abstractly, she dilutes its power and clarity. She also hedges on and thus softens her definition by saying it is, "merely a classic design or template that is flouted perhaps as often as it is conformed to" (Wajnryb, 2003, p. 20). As we will see below, when we clearly state the compelling and universal elements of story with the intent to exploit them fully – and when we set out a succinct theory for story-logical language education, we may begin realize more of the potential that story-logic has for learning and teaching.

Story Power Succinctly Defined

With this basic background in mind, let us look at a succinct definition of the magnetic elements of story. What exactly does "story" mean? In simplest terms, in a story we meet (1) a character with a goal, (2) who faces conflict, and (3) who attempts extrication from this conflict. That is, *character + conflict, + attempted extrication* = story (Gottschall 2012). These are *the big-three* elements of that give us story principles, story grammar, or story-logic. For story-logical language teaching, this three-part definition is essential and indispensable. If a text, discourse, or lesson plan does not contain the big-three elements of story, then for our purposes

that text is not story-logical. It is "non-story."

Haven (2014) magnifies the big-three story elements with his eight essential elements of story. He says that in stories, (1) we meet characters, and events happen to characters. (2) Characters possess traits that make them real, colorful, and intriguing. (3) Characters reach for goals, and (4) embrace a powerful motive, which reveals why they value their goal. As characters reach for their goal, (5) they face conflicts, problems, and obstacles. At the same time, they (6) face risks and dangers, which increase the probability that things will go wrong. And this creates excitement. To overcome conflicts, problems, obstacles, risks, and dangers, (7) characters must struggle to reach their goal. This reflects Gottschall's (2012) idea of "attempted extrication." Lastly, (8) stories project vivid images of sensory details about the characters, places, and actions, making the story real to readers and listeners. In sum, Haven's eight essential elements mesh with Gottschall's big-three.

According to Haven (2007), when we weave story-logic into texts, learners find these texts more comprehensible, more compelling, and more memorable than non-stories. To illustrate, let's look at this riddle:

Two Legs sat upon Three Legs holding One Leg in his hand. Suddenly Four Legs came in, and One Leg was stolen from Two Legs by Four Legs. Two Legs jumped up and picked up Three Legs. Two Legs ran after Four Legs, and then Three legs was thrown at Four Legs by Two Legs. One Leg was dropped by Four Legs, and Four Legs ran away. And One Leg and Three Legs were picked up by Two Legs. Two Legs sat down on Three Legs, and Two Legs said, "Thank goodness!" And One Leg was eaten by Two Legs.

We can restate the riddle as follows. A boy sat on a three-legged stool holding one chicken leg in his hand. Suddenly a dog came and stole the chicken leg from the boy. The boy jumped up and picked up the stool. The boy ran after the dog and threw the stool at the dog. The dog dropped the chicken leg and ran away. And the boy then picked up the chicken leg and the stool. The boy sat down on the stool, and the boy said, "Thank goodness!" and ate the chicken leg.

The riddle version of the story hides characters in abstractions and passive

constructions, whereas the "translation into story" provides a simple anecdote for the scientific basis of "story power," for in the character version, readers experience the text as more comprehensible, memorable, and engaging. Like Haven, many authors have written about story power. They say that human brains are wired for story (Cron, 2012). Our biology has programmed us to think in story form (Haven, 2007). The human mind is a "biological engine built by evolution to constantly create and consume stories" (McKee, 2018, p. 33). "Story designs are powerfully charged with meaning" (McKee, 2010, p. 14). We crave stories, for they match our Darwinian desires "to survive and reproduce" (Pinker, 2009, p. 541). Stories are a "cross-culturally universal, species-typical phenomenon" (Tooby & Cosmides, 2001, p. 7). Stories enable better recall and understanding (Zak, 2014) and affect beliefs, attitudes, and behaviors (Zak, 2015). Stories are psychologically privileged (Willingham, 2004) and match our cognitive preferences for narrative-like episodic memory (Tooby & Cosmides, 2001).

A Theory for Story-Logical Language Teaching

With our definition of story in mind, and considering story power, we will now look at a clear theory for story-logical language teaching. Today language teachers generally consider Krashen's (1982) comprehensible input hypothesis to stand as one of the pillars of modern language teaching. This theory claims that *humans acquire language by understanding messages*. Krashen's theory emphasizes understanding and acquisition, understanding as learners receive messages at a comprehensible level, and acquisition as learners get a feel for the language naturally and incidentally, as opposed to through direct study of grammar and vocabulary. Later Krashen added his compelling input hypothesis (2011), which claims that compelling input solves the problem of learner apathy because it sparks intrinsic motivation in learners. And of course, if story power is real, then story stands as the most compelling form of linguistic input available to the human mind. Story input is one thing, but many scholars criticize Krashen for asserting that input is all-sufficient, including Swain (1993) who claims with her comprehensible output

hypothesis that learners also need to produce output to acquire language, for output generates feedback for improvement, as well as more input.

Thus, for our theory of story-logical language teaching we reference the three above theories: the input hypothesis, the compelling input hypothesis, and the output hypothesis. And we can state our theory as follows. "*We best acquire language by understanding and recounting stories*," or more technically, "We best acquire language by understanding and recounting messages infused with story-logic." We can also restate the phrase "messages infused with story-logic," as "storified information," but the word "story" works as a catchall phrase for all these ideas. Thus, instead of just advocating the input of messages as Krashen does, our theory employs story-logical input and output, emphasizing the compelling nature of story-logic that engenders empathy for characters, their motivations, and conflicts. Briefly unpacking it, the theory claims that learners *acquire a natural automaticity* with language *mainly by understanding comprehensible messages in stories*, combined with output, the recounting of stories in actual communication.

As we will see below, language teachers can do story-logical teaching as a main or supplemental approach, but because of its merits, this paper claims that story should stand as essential and central to language education. That is, we need more story, not less. A skeptic might object saying that learners need to understand and communicate with non-story forms of discourse. Though learners may indeed need more than stories, educators do not maximize the full potential and energy of story-logic for teaching, learning, and communicating fictional, factual, and nonfictional information. We can consider ways to specify how to apply the theory of story-logical language teaching in future projects. But for now, we can say that teachers, writers, and communicators of all types need to use story-logic more. We need more story "not because we’re lazy sots but because our neural circuitry is designed to crave story" (Cron, Introduction, Section 1, para. 5). We need more stories (not fewer) because story works more powerfully than non-story as learners find stories more comprehensible, more engaging, more compelling, and more memorable.

A Framework for Story-Logical Language Teaching

Up to now, we have considered a clear definition of story and its power, as well as a theory for doing story-logical language education. Our big-three definition of story emphasizes *character + conflict + attempted extrication* (Gottschall, 2012). Our theory states, *we best acquire language by understanding and recounting stories*. The theory advocates large amounts of comprehensible story input, which leads to acquisition via a natural, automatic, feel for language. It also makes room for story-logical comprehensible output based on Swain (1985). Our theory implicitly claims that we better acquire language in stories, as we empathize with motivated characters (characters with goals) who face conflict as they attempt to reach for these goals. The question, therefore, now becomes how can we apply this theory in all aspects of language education?

Ideally, we should apply our theory within a productive framework. As previously mentioned, Nation's (2007) four-strands provide an established framework for planning lessons, activities, and curricula that can work with story-logical language teaching. With the four-strands, we can balance story-logical language teaching with (1) meaning focused input, (2) meaning focused output, (3) fluency development, and (4) language focus. With meaning focused input, we provide learners with story-logical input at their appropriate level. We can do this with reading, listening, or video materials. With meaning focused output, we provide learners with opportunities to produce spoken and written messages. But we emphasize the use of fictional and non-fictional messages infused with story-logic. With fluency development, we help learners develop reading speed, speaking fluency, and writing fluency with storified information. For fluency, learners generally use materials where they have mastered all the linguistic features and know all the words. And with language focus, we help learners work with grammar, discourse structure, and pronunciation using a story-logical emphasis. We can consider examples of how to use the four-strands with story-logic in future works. But for the time being, we will look at two simple experiments done in conjunction with this project that show the power of story and exemplify the first of the four

strands: meaning-focused input.

Story-Logical Experiment: Method

Two experiments were conducted, and a total of 60 participants were recruited for the study. The participants were undergraduate students of linguistics at a Japanese university who volunteered to participate in this experiment. They were divided into two separate groups (n=30). Both groups were presented with separate texts in English that presented the same facts, but one text presented the facts with story-logic, and the other text presented the same facts without story-logic. Both texts summarize the work of Dr. John Pilley and his dog Chaser who learned 1026 English words (Pilley & Reid, 2011; Pilley and Hinzmann 2013). The story-logical version of the text presented the facts with a character who has motives and goals and who faces conflicts and troubles, and who attempts to get out of these troubles. The non-story logical version of the text was more encyclopedic in style. The story-logical version of the text was profiled at an elementary, basic level or CEFR A2+. The non-story logical version of the text was profiled at an elementary, basic level or CEFR A2+. (See the Appendices 1-3 for these texts and the questionnaire.)

For both experiments, one group read the story-logical text, and the other group read the non-story logical text. Experiment 1 investigated learners' attitudes towards reading. Experiment 2 investigated learners' recall and retention in reading. For Experiment 1, the questionnaire measured participants' attitudes toward reading story-logical and non-story logical versions of a text. The questionnaire had three types of questions with a 7-point Likert scale. The first type of questions (n=6) measured the likability of the characters in the story. The second type of questions (n=3) measured the difficulty of the story. The third type of questions (n=3) asked about the enjoyment of the story. For the Experiment 2, comprehension questions (n=15) assessed learners' recall and retention comparing two conditions, story-logical and non-story logical versions in reading.

All participants did a web-based reading session on a web browser. In the reading session, one group read a story-logical version of a text, and the other group

read a non-story logical version of a texts. The reading session and questionnaire took approximately 30 minutes to complete. After the reading session, participants in both groups did Experiment 1 with the 12 questions that measured likeability, difficulty, and enjoyment. Then participants did Experiment 2 with the 15 multiple choice comprehension questions. All questions were presented via a computer screen, and each participant was asked to click the answers they chose.

Story-Logical Experiment: Results

Experiment 1 was designed to investigate learners' attitudes toward engaging in story-logical and non-story logical versions of a reading. To address the question, scores on the questionnaire items were submitted to independent sample t-tests, and the mean scores on the questionnaire items were compared. For the character likability, the 30 participants reading story logical version (M = 5.6, SD = 0.95) compared to the 30 participants reading non-story logical version (M = 4.1, SD = 0.64) showed significantly better scores with a large effect size, $t(58) = 6.76$, $p = .029$, $d = 1.75$. On the other hand, there was no significant difference for the story difficulty, $t(58) = 0.63$, $p = .17$, between the participants reading story logical version (M = 5.7, SD = 0.84) and the participants reading non-story logical version (M = 5.5, SD = 1.04). For the story enjoyment, the participants reading story logical version (M = 5.8, SD = 1.02) compared to the participants reading non-story logical version (M = 4.7, SD = 0.39) outperformed significantly, $t(58) = 5.34$, $p = .001$, associated with a large effect size, $d = 1.38$.

Experiment 2 investigated learners' recall and retention in reading. The 15 comprehension questions compared comprehension in reading the story-logical and non-story logical versions of a text. The participants were required to recall information from the texts without looking back at the text that they had just read. The results indicated that the participants reading story logical version (M = 13.13, SD = 1.25) outperformed significantly, $t(58) = 1.98$, $p = .048$ associated with a medium effect size, $d = 0.51$, the participants reading non-story logical version (M = 12.37, SD = 1.72).

In sum, first, the participants who read the story-logical version of the text liked the characters more than the participants who read the non-story logical version of the text. Second, the participants in both groups did not indicate any difference in difficulty between the two texts. Third, the participants who read the story-logical version of the text enjoyed the text more than the participants who read the non-story logical version of the text. And fourth, the participants who read the story-logical version of the text comprehended and recalled the text better than the participants who read the non-story logical version of the text. In short, with two texts of equal difficulty, participants liked the characters more, enjoyed the text more, and recalled and comprehended better when information was embedded in and infused with story-logic.

Story-Logical Experiment: Discussion

This experiment exhibits a few basic limitations. We did not specifically account for the participants level of English, even though the grouping of the students was completely randomized. Skeptics will find it hard to quantify how one text can exhibit story-logical elements while the other text does not, though the story-logical version of the text explicitly emphasized characters, motives, goals, conflicts, and emotions, and the non-story logical text did not. Nevertheless, the results fit within the broader scope of research on the power of story and mesh with our theory of story-logical language learning that we best acquire language by understanding and recounting messages infused with story-logic.

Conclusion

In this introduction to story-logical language teaching, we saw the big-three definition of story as: *character + conflict, + attempted extrication = story* (Gottschall, 2012). We considered a clear and actionable theory: *We best acquire language by understanding and recounting stories,* where the word "stories" refers to any information embedded or infused with story-logic. We examined the possibility for doing story-logical teaching within Nation's (2007) planning

framework of the four-strands, which opens the door of possibility so that teachers can do story-logical teaching with every aspect of language acquisition, including the four skills and the nuts and bolts of grammar.

Because of the power of stories, we might expect learners to experience story-logical language teaching as more comprehensible, memorable, compelling, and effective as research outside of linguistics suggests (Haven, 2007). Consequently, we can see the strong logical and theoretical foundation for story-logical teaching, but we still need more research to support it. The experiment done for this paper represents the kind of additional research that needs to be done in the future. Many questions arise. Do language learners more effectively acquire linguistic forms (grammar, lexis, phonemes) when they are infused with story logic? Do stories and story-logical content motivate learners more than non-stories? We face practical questions as well. If we use stories all the time, how will students learn to comprehend and communicate in non-story forms? These are good questions, but we do not need to look at story-logical teaching as an "all or nothing" approach. As stated above, we can use story-logic to supplement and energize discrete parts of language lessons and courses.

Nevertheless, as this paper shows, we *can* use story-logical teaching as a full throttled method and approach, with which we infuse every aspect of language teaching with the light and life of story. And though common sense tells us that students need to learn to communicate with non-story forms, it also makes good sense that we will miss the mark if we fail to constantly use the vitality of story. Whether we make story the center or a supplement, we do not need less story in language education. We need more story, for we will surely teach and learn languages with more compelling and memorable energy if we consistently kindle it with the sparkle and zest of story.

Appendix 1: John and the Smartest Dog (Story-Logic Version)

1. **Read the story.**
2. **Click the link at the bottom.**
3. **Do the survey. Don't look back at the story when doing the survey!**

Maybe John Pilley loved dogs too much. John studied animals at university. And for 16 years, he worked with his dog Yasha. But now John held Yasha in his arms, and he cried, "My dear Yasha, don't die!" John did everything to save his dog. But Yasha was too old and sick. And when Yasha died, John felt his heart break. So, John promised himself, "I will never love a dog again."

Time passed, and John retired from work. Every day, he sat in a chair with a sad face. John's wife saw his sadness. So, one day she came to him and said, "John, I have a gift for you." John looked down and saw a smiling face — a beautiful black and white dog. And John loved his new dog and named her "Chaser."

Chaser is a Border Collie. People enjoy dogs, like Labradors, Golden Retrievers, and Poodles. But Border Collies are different. Border Collies work with sheep. And to do this work, they must listen to their master's words and follow directions. So, Border Collies stand out as the smartest dogs for understanding language.

John had read about a Border Collie named Rico. Rico had learned about 200 words. John thought to himself, "Maybe Chaser can learn more words than Rico!" John liked the challenge. So, every day he spent 5 long hours with Chaser. He worked and played with Chaser — teaching her the names of many things. And in time, Chaser learned 1022 English words!

John believed his dog was special. And he wanted other scientists to notice. But scientists don't believe so easily. So, John studied a lot. And he wrote a paper about Chaser's ability to learn words. Then he made a risky choice. He sent the paper to Science Magazine — the most powerful science magazine in the world. But Science Magazine did not accept John's work.

John felt shocked. He took a big chance with Science Magazine. Now he felt

stupid. He thought, "It's not fair! Science Magazine published the story about Rico. Why not Chaser?" But John didn't give up. One year later, he sent his research to another magazine. Then he waited. When the answer came, John opened it and read these words: "We are sorry, but…"Rejected again, John felt his heart stop.

Science magazines push writers to follow hard rules. John carefully followed all the rules, so the result felt unfair. But John kept working. Three years later, he tried again. The reply came, and finally, success! John published his research in a famous science magazine. After that, Chaser rose up as a TV and Internet star! John wrote a popular book about Chaser. And many people heard Chaser's amazing story.

Time passed. At age 89, John became sick. And with Chaser by his side, John died. And a year later, at age 15, Chaser also died. Yet the story of John and Chaser lives on! They changed how we think about dog intelligence. And today, Chaser stands tall — as the smartest dog in history.

Use the link to see a PDF version of the questionnaire.

https://ilinguist.net/language-teaching-with-story-logic/

Appendix 2: John and the Smartest Dog (Non-Story Logic Version)

4. **Read the story.**
5. **Click the link at the bottom.**
6. **Do the survey. Don't look back at the story when doing the survey!**

Dogs are popular pets. A lot of people like dogs because they are smart. They learn tricks such as "sit," "wait," and "shake hands." There are many kinds of smart dogs: Labradors, Golden Retrievers, and Poodles. But Border collies are the smartest. Border Collies work with sheep. To do this work, they must listen to their master's words. They must follow directions. So, Border Collies are special. They are the smartest dogs for understanding language.

One of the smartest Border Collies was Rico. Rico learned about 200 words. And people read about Rico in a famous science magazine. There is another smart Border Collie named Chaser. Chaser learned 1,022 English words. She learned more words than any other dog. And she changed how we think about dogs.

Chaser belonged to Dr. John Pilley. Dr. Pilley was a scientist. And he studied animals at university. When he worked at university, he had a dog called Yasha. Dr. Pilley worked with Yasha for 16 years. Then Yasha died. Yasha's death made Dr. Pilley sad. So, he decided not to have any more dogs.

Dr. Pilley retired from his job. Then he read about Rico. Rico had learned 200 words. Dr. Pilley liked the idea of teaching words to a dog. Soon after that, Dr. Pilley's wife gave him a new dog. Dr. Pilley named the dog Chaser. And he started to train Chaser. He worked daily with Chaser. They worked for four to five hours — every day. Dr. Pilley taught Chaser the names of many objects. Every day, Chaser listened to Dr. Pilley. Dr. Pilley taught Chaser words. And they got good results. Chaser learned more than 1,000 words.

Dr. Pilley wanted people to know about Chaser. As a scientist, he especially wanted other scientists to know about Chaser’s intelligence. But two science journals rejected his work. Then Dr. Pilley managed to publish his results in a famous science magazine. It was not an easy task because scientists don't easily

believe things. To publish his results, Dr. Pilley had to follow strict scientific rules. He carefully tested Chaser.

First, the best science magazine called Science rejected his research. So, Dr. Pilley did more experiments. He tried to publish in another magazine. But this magazine also rejected his work. Dr. Pilley tried a third time. Finally, his results were published. Scientists came to understand. They saw that Dr. Pilley's experiments were done correctly. And Chaser's memory was remarkable.

After that, Chaser became popular in the news. She appeared on TV shows. Dr. Pilley also wrote a book about Chaser. And the book sold over a million copies. Many people heard Chaser's story. Dr. Pilley died at the age of 89. One year later, Chaser died at the age of 15. Dr. Pilley is remembered for his research with Chaser. And Chaser is known as the smartest dog in history.

Use the link to see a PDF version of the questionnaire.
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