

# Research

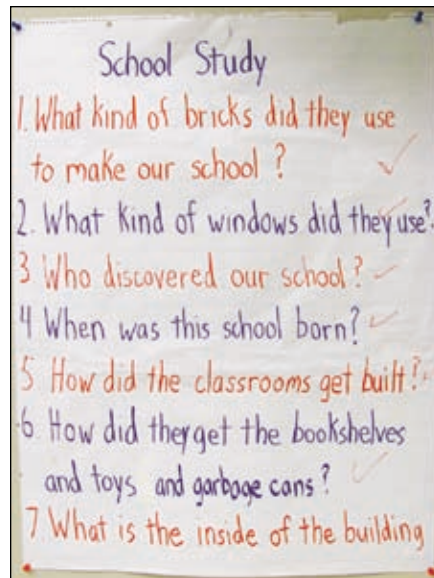
## THE LIFELONG ADVENTURE

### 1 ■ EC Kindergarteners Start Research Early

In the four kindergarten classes at Ethical Culture, much of the year is devoted to the basics of research, as the students learn about the school and the building, inside and out. “We start by asking them what they want to know about,” explains teacher Geri Guidetti, “and they go find out the answers.”

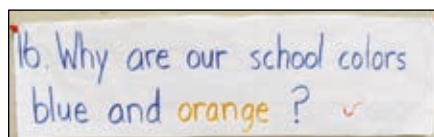
What do four-year-old students want to know? Plenty! For example: How many stairs are there? How many pets are there in the school? How was the school designed? How did they move all the furniture into the classrooms? Why are our school colors orange and blue? The questions are printed neatly on big sheets of paper, and then the students start touring the building in small groups, asking their questions of people like interim principal Joyce Evans and facilities director Joe Piselli. They posed personal questions in their interview with Piselli: Is your job hard? Do you just take care of the building or the people too? What do you like to draw? What is your favorite animal? The answers are duly recorded and shared with the class.

Kindergarten teacher Maryann Mazzacaro notes, “Research for this age group is about finding out what people do, how and why they do it, and why it is important. We try to make what kids see and hear about relevant to them, and this hands-on ‘data gathering and recording and applying’ approach works well. All of these rich ex-



periences help kindergarten kids to better understand and organize the world and to make sense of how things and people interact, interrelate, get their needs met, and get things done.”

There are opportunities for research at any point in the day. “I use the computer a lot, says Guidetti. “If we’re reading a story and there’s a reference to double dutch, they don’t know what that is. So we looked on YouTube and found a video that showed double dutch. Everything is an opportunity.” – *Ginger Curwen*



### 2 ■ Research in Action at Fieldston Lower

How are fifth grade Fieldston Lower students tackling environmental research? We went inside the classroom in November and visited Michael Wilkinson’s science class to find out. The driving question that day: What causes hurricanes? In order to discover the answer, students explored the process of convection – the movement of molecules within fluids. Convection is one of the major modes of heat transfer, and that day’s particular investigation centered on how warm and cold fluids interact.

Students gathered into teams and set up elaborate apparatuses of Styrofoam cups and tanks of water connected to temperature probes (which, in turn, were connected to laptops to graph results) to conduct the experiment. Following the scientific method, they looked at differences in water temperature, and aimed to prove their hypotheses regarding what causes water to move. Dye was added to the cups filled with water of varying temperatures; when holes were poked into the cups, students observed and recorded how the colored water flowed out into the tanks. One student remarked to his group, “I think that looks more translucent than light green.”

The class has been tracking 2009 Atlantic storms with great attention, and “Hurricane Watch 2009” unit materials—with maps, graphs, and conclusions—grace the walls. For example, there is a poster that



*Fieldston Lower fifth graders explore the causes of hurricanes.*

contains the evaporation rate data from an investigation that preceded the convection lab. From this series of labs, the students develop an understanding of the process of convection and then tie that to the creation of high and low pressure zones in the atmosphere. These pressure zones in turn lead to the creation of wind, notably the very strong winds associated with hurricanes.

During our visit, some of the computers failed to graph the results; while frustrating, the hitch illuminated one of the major values of research. That is, failure is at the core of the process; through these failures, students and teachers alike develop ways to improve and grow. The graphing problem was resolved before the end of class, and the groups were able to see their data. Wilkinson notes, “We are doing ‘real’ science, which means it can be messy and unpredictable. The upside though, and that far outweighs any inconvenience in my mind, is that the students really own the data. They appreciate it as authentic and hold it in much higher regard than contrived data that is so highly controlled

to come out a certain way. Often, the data leads them to ask much more profound questions and create novel follow-up investigations.” — *Joshua Baldwin*

### 3 Sixth Graders Become Expert Researchers

Information Arts 09-10, designed specifically for sixth graders, debuted this September and sets the foundation for the middle and high school years. The students cycle through three topics – information literacy taught by librarian Mandy Colgan, digital citizenship taught by Fieldston Middle principal, Luis Ottley, and technical tools by Jay Trevorrow, ECF’s director of technology and a middle school teacher. Trevorrow was prompted to design the course because of the need he saw to address a convergence of information resources for that age (digital and library) and a need to model appropriate decisions for digital etiquette. Here’s a look inside the three topics:

#### a. Information Literacy

On a recent Wednesday afternoon in the Tate Library, a small group of Fieldston Middle sixth graders were clustered around two tables learning how to catalogue a book with librarian Mandy Colgan. This was their third class in a series of five designed to teach students how to take full advantage of library resources for all of their research needs. In the first session, they were given a general orientation of the library, met all of the librarians, reviewed the rules, and checked out a book. In the next class they learned how to use the catalog to search for a book. This time, they’ve entered the mind of a librarian and learned what that number assigned to each library book really means.

After Colgan presented a brief review of what the numbers that make up Dewey Decimal System represent, students engaged in learning by doing; each picked a book from a pile and determined how to categorize the book using key descriptive words. One student picked up a book about surfing and skateboarding and worked her way down from the general to the specific: the arts, then recreational/performance arts, and finally aquatic and air sports; then she found the appropriate numbers to match. Now, the students understood why the book is kept where it is – not to mention where to find the books they need when conducting research for school projects.

Future units in this part of the Information Arts course cover the meaning and use of databases, with special attention to rules of copyright, bibliographic formats, and useful tools for doing internet searching and research on online newspaper indexes and encyclopedias. In addition to appreciating the multitude of information available on such databases, students also come to the important realization that some information is simply not online, and that the act of searching the stacks and scanning the pages of books is one of the oldest academic traditions with good

reason. Colgan points out that a major goal of the Tate orientation program is to make the sixth graders feel comfortable in the library. Then, these middle school students will have passed a major threshold on the way to becoming mature researchers. – *J.B.*

### **b. Technology Tools**

Over in another classroom, teacher Jay Trevorrow is in front of the SmartBoard, teaching his sixth graders about Moodle, an open-source course management system that educators use to create online learning sites. Moodle is the key system used at ECF for the 250 (up from just four a few years ago) “blended” classes that combine classroom time with online learning. Some teachers just use their Moodle sites to post homework, while others host book club discussions on line. Information Arts has its own Moodle site where Trevorrow posts assignments, curriculum, online resources, and even a tech survey. In later units, students will learn about their student emails (how to log in, store files, IM) and explore the resources available to them, including key people, the ECF Help Desk, SmartBoards, and sites like Open Office and Atomiclearning. – *G.C.*

*Fieldston Middle’s principal, Luis Ottley, teaches digital citizenship.*

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*Librarian Mandy Colgan teaches sixth graders how to catalogue a book.*

### **c. Digital Citizenship**

It’s not enough to know how to use technology, students also need to know how to use it appropriately and responsibly, and that is the task of the segment in digital citizenship. Observing the third class in this segment, we find 11 sixth grade girls ready to take it on. They quickly divide

into small groups, and each of them gets a digital scenario to discuss and analyze. “Share this with your posse,” says the teacher, Dr. Luis Ottley, handing out the scenarios. In each case, the group is to consider whether the individual is using technology inappropriately, what actions make the scenario inappropriate, and what could or should the individual have done differently.

Here’s one scenario: A girl with a new cell phone takes pictures of her classmates and pictures of the substitute teacher’s “back” and posts them on the internet. What did she do wrong – or more aptly, how many things did she do wrong? The sixth graders are quick to chime in. “You can’t use cell phones in class,” says one student. “The classmates and the teachers didn’t know they were being photographed,” says another. “The girl should have asked permission,” adds a third.

In another, the group considers the case of a girl with a large list of email contacts, most of whom she doesn’t consider good friends. What’s wrong here? Again, the answers come quickly. “She doesn’t really

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know those people and can't really trust them. She could be giving personal information to people she doesn't know." Dr. Ottley points out that the problem began with the girl going beyond what she could control. Remedies include telling her parents, shutting down the account, and starting over with a new one, known only to her best friends.

In later classes, the students will go from digital etiquette to explore digital literacy, commerce, law, rights and responsibilities, health and wellness, and digital security. "Ultimately," says Dr. Ottley, giving the big picture, "I am training you to be digital consultants and to be able to evaluate an organization on these different levels." The homework for the next class: to become conscious of the amount of time spent IMing or texting on a weekday and on a weekend day by keeping a record. "Oh no, that's going to be a big number," groans one student. The stage is set for the next class. — *G.C.*

## 4 College Research at Fieldston Upper

The college process is often seen as being a mysterious, strenuous, and unsettling experience. Yet, in many ways it is simply a major research project, not unlike the kind that students have had to do in their history courses throughout their time at Fieldston. It involves determining a topic, finding and analyzing source material — the "primary sources" beloved of history teachers — a perusal of secondary sources, and some field work. It is a particular kind of research assignment, for the final product is not a term paper, but a list of colleges that the student has decided to apply to. The college process is not unlike a course, and we would like it to be seen as such.

The focus of the research is colleges and universities, leading to a comparative study of a selected number of them. The

TOBY HIMMEL



*Fieldston Upper students in the Tate Library.*

primary sources are the items that colleges send and the information they put on their websites; secondary sources are college guide books and commercial websites that give their description of various colleges; the opinions of current students on blogs about colleges can also serve as secondary sources. Just as one would in a history course, the student needs to read this kind of material with a critical eye, particularly because many colleges have hired marketing companies to write their material and so these documents can be very biased. The same approach is needed for searching a college's website, probing deeper to get beyond the promotional rhetoric to more primary sources, such as a weekly calendar of actual events on campus and the student newspaper, items which reflect what actually happens and what students, not the administration or admissions office, have to say.

We encourage students to take notes *en route* so that each college stands out from the others. One way to ensure this result is to pick a particular area — an individual academic department, or the student news-

paper — and then extract just that element from a range of colleges, thereby providing the raw data for a comparative presentation of how different schools deal with the same thing. This project also has an element of anthropological field work, a.k.a. the college visit, where the researcher can engage his primary sources as living beings and determine whether he would like to live among them.

Yes, this research is very personal, and the students themselves become the focus of it as much as the colleges, by dealing with questions such as: Who are they (as apart from parents and peers)? Where would they really want to live for the next four years (for they will be leaving home)? And where might they want to be in their thinking about life at the end of college and beyond? These are questions of far greater importance than matters of prestige and reputation. The college application process is a kind of capstone research project in which students can apply some specific research skills to learn about colleges and themselves. —*Harry Dawe, Fieldston College Counselor*

## 5. The Green Roof: A Model for N.Y.C.

The LEED-certified Fieldston Middle building has many environmental features, but its crowning glory is the green roof. Actually, make that two green roofs: There is an upper and a lower green roof, each covered with vegetation that provides insulation in the winter and reduces heat in the summer. They have attracted a steady stream of outside visitors, who are eager to see the research projects led by two scientists at Columbia. The projects are helping to expand environmental knowledge in New York City and beyond.

Encouraged by the school's first and second green deans, Peter Mott and Howie Waldman, and science teacher Palma Repole, Stuart Gaffin was the one who got the projects going on the two roofs at Fieldston. He's a research scientist with the Center for Climate Systems Research at Columbia University and has managed and directed green roof projects across the city. *The New York Times* (6/7/2009) did an editorial about his work, calling him the "city's rooftop Johnny Appleseed."

What's the value of green roofs? They mitigate the adverse affects from what is called the urban heat island effect, where black roofs absorb heat from the sun during the day and release that heat at night, contributing to global warming, both indirectly and directly. Green roofs, in contrast, stay cool. They also sop up rainwater like a sponge during storms, thus alleviating the problems caused by urban stormwater runoff.

The upper roof is equipped with a weather station and sophisticated real-time environmental sensors. The sensors and probes measure wind speed, rainfall, soil moisture, reflectivity and temperature on a green roof, compared to a nearby white (or light-colored) roof and a black roof. You can look at the actual data live at <http://128.59.83.19:81>.

### GET LOST IN THE STACKS

Been to the Tate Library lately? Don't let distance stop you. You can visit the Tate Library online at [www.ecfs.org/academics/libraries/tate/home.aspx](http://www.ecfs.org/academics/libraries/tate/home.aspx) and browse its research links (<http://www.ecfs.org/academics/libraries/tate/researchlinks.aspx>) for general search engines and libraries, as well as museums, websites, and databases specific to the arts, ethics and philosophy, foreign languages, health, history, law and government, literature, and science. Don't forget: Fieldston alumni have Tate Library borrowing privileges, so search the catalogue at <http://ecfs.ipac.dynixasp.com/#focus>. Also take a look at the terrific libraries of Fieldston Lower (<http://www.ecfs.org/academics/libraries/fieldstonlower.aspx>) and Ethical Culture (<http://www.ecfs.org/academics/libraries/ethicalculture/home.aspx>).

ADAM WATSTEIN





*Working with a graduate student at Drexel University, Gaffin and his team have successfully installed and are running an innovative new method for measuring water retention on the upper roof. They have built a scale model of the roof (shown above) and are literally weighing the scale model every five minutes so they can see how much rain is absorbed and how quickly.*

Fieldston was Gaffin's first monitored project. "When I go around town, and talk about my work, I'm surprised by the number of people who admire and want to replicate the Fieldston roof." Based on the success of the Fieldston green roof, Gaffin and scientist Matt Palmer, who is conducting the native plants project on the lower roof, together with the city's Greenbelt Native Plant Center, are in discussion with New York City Department of Parks & Recreation to establish similar roofs on 10 city recreation centers in the future.

"Fieldston was the first monitored project we did, so it is the longest running," said Gaffin. "Then we did in rapid succession one at Columbia, then the Queens Botanical Gardens, and then the Con Edison Learning Center. Now we are expanding to different roofing systems, especially white

roofs. The Mayor's office is very keen on using white roofs around the city as a way to lower temperatures." Gaffin participated in a well-attended panel in November set up by the U.S. Green Building Council to debate the merits of white and blue roofs versus green roofs as the future for the city. "I think we should use many white roofs but just as many green roofs," contends Gaffin.

The research project on the lower roof at Fieldston Middle is also extending green roof knowledge as it investigates the feasibility of using regionally endangered native ecosystems on green roofs. It is run by Matt Palmer, a lecturer in the department of ecology, evolution and environmental biology (E3B) at Columbia. Typically, green roof vegetation is dominated by sedums, which are neither native nor as attractive to native birds or insects. Palm-

er, who is interested in meshing restoration ecology with green roofs, selected a variety of native plants that are specific to this area, some from the Hempstead Plains grasslands and others from the rocky summit grasslands. He also planted a control group of sedum. The question was, would the native plants be overwhelmed by the sedum? Which group would thrive? Two years out, Palmer reports, "The natives are doing well and attracted a lot of pollinators. It's an important finding because the success of the natives was not anticipated. Others have tried but were unsuccessful. These plants definitely make the roof a nicer and more interesting place to be."

Gaffin points out that on the lower roof, "We restored endangered grasslands, and the value of that cannot be overstated. The Hempstead Plains ecosystem was down to 40 acres, less than one percent of what it once was. It was once one of the largest prairies east of the Mississippi. Think of this in terms of ecosystems: If you want to find nature, come to this roof in the Bronx!"

To find out more about the Fieldston Green Roof Research Station, go to <http://www.ecfs.org/about/sustainablefieldston/roof.aspx> – G.C.

## 6 ■ Creating a Curriculum on the Green Roof

Laura Dickinson, recently graduated with a master's from Columbia, wrote her thesis on "Expanding Sixth Grade Science through Inquiry on a Green Roof." She knows the topic well: she's been up on the lower green roof of Fieldston Middle three or four days a week this fall, meeting with sixth grade science students. She works in conjunction with middle school science teachers Rob Getz, Courtney Hull, and Robin Ostefeld. Matt Palmer, whose work on the lower green roof is detailed on page 17, was one of her advisers at Columbia.

In this situation the green roof is outdoor classroom to the max. Specific lessons taught include mapping skills, recording detailed observations, and generating thoughtful experimental questions. On a visit to her class in late fall, students were concentrating on the plants on the roof, from the goldenrod to the prairie grasses. The emphasis is on close observation and inquiry, literally research from the ground up.

First students were asked to pick a plant that appealed to them. Then they spent lots of time sketching the plants, with careful attention to stems and leaves. (“See if your neighbor can identify your plant by looking at your sketch” was the directive. Next they measured their plants and learned how to identify the kind of plant, noting any kind of plant adaptations that might apply (like juicy leaves that store water, seeds that disperse in the wind, or thorns to prevent being eaten). In late fall, all the work was being assembled into a class field guide.

Some of the students have commented on their experience and how it changed their perception of science. Wrote one student, “I thought that [science] was all in a lab and you would pour stuff together and there would be explosions and stuff like that. But I realize a lot of it now is you go places and you write down what you see and you think about that and expand on that. It is a lot more than stuff exploding... science is very precise and interesting... also... a large chunk of science is gathering data and observations.” Students enjoyed being outside, experienced a real connection to the green roof space and expanded their awareness of surrounding environmental issues like storm water runoff and the urban heat island effect. – G.C.

*Laura Dickinson teaches sixth graders to identify the plants on the roof by close observation and measurements.*

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Band: \_\_\_\_\_

**Data Collection for Identifying Your Plant:**

1. What is the average height (cm) of the central stem (or if stem is not present, the length of the longest leaf)? : \_\_\_\_\_ cm
2. What is the length of the longest leaf from base to tip (cm) (or if a stem is not present the width of the leaf)? : \_\_\_\_\_ cm
3. How would you describe the color of your plant's leaves? \_\_\_\_\_
4. Draw one of your leaves below, then circle the picture that closely resembles your plant's leaf shape.
 

MY PLANT
5. Draw the arrangement of leaves on the stem and then choose the arrangement that looks closest to your plant.
 

MY PLANT
6. Draw how the leaves are attached to the central stem then choose the attachment closest to your plant.
 

MY PLANT



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Author and professor Stephen Hess

## 7. Deep in the Capital Stephen Hess '51

“Research is my work. It’s the end all,” says Stephen Hess ’51, senior fellow emeritus in governance studies at the Brookings Institution, a Washington D.C.-based think tank. He is also distinguished research professor of media and public affairs at George Washington University. Hess has had a long career in the capital, serving on the staffs of Presidents Eisenhower and Nixon, and working as an advisor to Presidents Ford and Carter. The humor columnist Dave Barry once quoted Hess as saying, “A think tank is where you do your thinking during working hours,” and, hearing him speak about his work, Hess, brimming with energy, sounds unmistakably happy in his field. Whether Hess is poring through books, searching the internet, or conducting interviews at home and abroad, his profession is one that truly places research front and center.

When we caught up with him, Hess was engaged in three exciting projects – one paper and two books. The paper, to be presented at a conference in February and which will be a chapter in a multi-author book, examines President Eisenhower’s relationship with Congress. By delving into Eisenhower’s two-volume memoirs, as well as the administration’s staff directories, Hess was honing his understanding of a formalistic executive branch, one that had very little to do with Congress – strikingly different from today’s conditions.

The two books are both outgrowths of projects Hess has been working on for much of writing career. One is a revised edition of *Drawn and Quartered: The History of American Political Cartoons*; the other, *Class of ’78: What Happened to the Washington Reporters?*, relates to his comprehensive study *The Washington Reporters: Newswork*. Hess relied heavily on a survey of 450 Washington reporters in his research for that book. The internet has proven to be an invaluable resource for

*Class of ’78*, as Hess works to trace the career patterns of the many journalists covered in *The Washington Reporters*.

His work has brought him all over the world, and inside many government agencies. Hess traveled the globe to conduct research for his book, *International News and Foreign Correspondents*, an incisive account of how the American media presents foreign news. And he conducted extensive site observation at the press offices of the White House, Pentagon, State Department, Transportation Department, and the Food and Drug Administration while researching for his book *The Government/Press Connection*.

Recently, Hess was in England, at Ditchley (a manor house that Winston Churchill used as a summer home during World War II), participating in a conference on governmental transitions. Specifically, he offered insights from his recent book *What Do We Do Now? A Workbook for the President-Elect*, as the British are preparing for a change in power next year. With his hands full, Hess may be the epitome of the professional researcher: instinctively curious, deeply motivated, and highly focused. – J.B.

## 8. The Medical Field Laura Blum '89

When it comes to research, Laura Blum ’89 – who worked at the American Medical Association as a writer of policy papers, handled relations with Medicare in the Washington, D.C. office of the Joint Commission, and now works at the Heart Rhythm Society – comes armed with an excellent question: “Who is the research for?” That is, who is your audience? Blum, whose audience is cardiac professionals, is highly attuned to the fact that there are many different ways to define research, and that there are several ways to communicate one’s findings.

At the Heart Rhythm Society, as director of

Medical research synthesizer Laura Blum



quality improvement and outcomes, Blum engages in what she calls “meta-analysis,” which involves analyzing and synthesizing evidence-level research conducted by scientists and physicians, which in turn can be put into practice. She reads articles published in peer review journals such as the *New England Journal of Medicine*, *Archives of Internal Medicine*, and *Health Affairs*, and identifies material to support performance measures.

Recently, Blum – emphasizing that her work is to seek out the research that already exists – read a paper in *Archives of Internal Medicine* as part of what she calls her “research on the research” of medication safety alerts; her presentation of the authors’ findings will help determine how the performance of the Heart Rhythm Society’s constituents will be measured. Hence, her efforts contain a significant advocacy component: to promote evidence-based performance measures that accurately reflect the quality of patient care.

This means Blum needs to stay on top of the latest developments to ensure that she is promoting the most current evidence. In the past, she used the National Library of Medicine’s *PubMed.gov* but, nowadays, she finds almost everything through Google (which leads her to both the reference and the original article). Blum points out that she is not at the front end of research; she is a prime player, though, in the multiple levels of research between science and care. – J.B.

## 9 ■ An Actor Prepares Zach McGowan '98

Zach McGowan '98 is a working actor based in – where else? – Los Angeles. He’s been there for four years, but he got his start at Ethical in the second grade play, when he played Badger in *Wind in the Willows*. A parent who happened to be an agent was in the audience, and she

approached McGowan after the performance and helped him land his first job, on *Sesame Street*. But Big Bird and Elmo took him out of school for two weeks, so he decided to put the career on hold.

“As an actor you’re held by your instrument,” says McGowan, and with an athletic build and occasionally shaved head, he has been cast as a soldier several times. He conducts a vast amount of research for these roles; to prepare for the off-Broadway play *The Verge*, McGowan spent many hours on the phone with his brother Matthew '94, who had been a U.S. Marine, absorbing the details of life in the Corps. McGowan emphasizes the importance of access to the military community as he researches a character. His father is the president of the United Veterans Council – the knowledge that comes from these roots helps McGowan do the work of representing soldiers.

In 2006, McGowan portrayed Spec. Hank Jackson in two films produced by Roger Cormana, *The Hunt for Eagle One* and its sequel, *The Hunt for Eagle One: Crash Point*. This role demanded extensive physical research. The cast trained with the Embassy Guard in Manila; these interactions with the soldiers, McGowan points out, “were essential to understanding their outlook on life.” McGowan also does plenty of research the old-fashioned way: by reading books. Two works that McGowan often returns to are Tim O’Brien’s *The Things They Carried* (which he first read at Fieldston), and Evan Wright’s *Generation Kill*, which, he notes, “shed light on what the modern soldier deals with.”

One role that proved uniquely challenging came when McGowan played a blind character in an off-Broadway play in 2004. “It was daunting. Just blindfolding yourself doesn’t do it.” Research, in the form of volunteering and taking a class at the Jewish Guild for the Blind, took a lot of the edge off. Nowadays, in addition to acting on television and in movies (recent



Actor Zach McGowan

credits include *CSI: Miami* and *Terminator Salvation*), McGowan is doing lots of voice-over work, which requires plenty of research. For in addition to being an actor, McGowan explains, “You’re also working for a client. For example, CBS has a different style than CNN, and you need to find the middle ground between what they want and what you want.”

Scripts also demand research. When he receives one, McGowan breaks it down to understand his place in the overall production. He also points to the importance of self-research as he strives to bring himself to a role. “It’s similar to therapy. You need to understand why you are the way you are. It’s immensely personal. What triggers the way you respond to certain things?” McGowan stresses that as an actor, he is always doing something to improve himself. It takes great discipline to keep up, but “if you love your job then you love your research. I do research to stay one step ahead, to stay in the game.” – J.B.