Reliable Sources: Promoting Critical Thinking in the [Mis]information Age

By: Katherine Jones

INFORMATION CANNOT always be trusted. Despite popular opinion regarding the devastating impact of the Internet on the modern age, the inherent untrustworthiness of information is not new. Satire, misinformation, and disinformation have been circulating for centuries, even long before the printed word. However, thanks to the relative ease of creating and sharing content online, our students are confronted with publications created solely to entertain, persuade, and incite via incorrect or incomplete statistics.

Meanwhile, rapidly advancing technology provides novice researchers with immediate access to overwhelming numbers of resources, and the traditional steps of the research process–such as resource evaluation–have seemingly fallen to the wayside in deference to instant gratification and confirmation bias. Students diving into the world of academic and professional-level research often have no awareness of the gaps in their understanding when it comes to performing critical, thoughtful research. As educators, we must spare the time and effort required to help fill in these gaps and provide students with a workable set of skills to address this lack of critical thinking in the research process.

Beyond the potential lack of credibility of information resources, students also struggle with other steps of research performance such as locating viable resources in a timely manner, accurately determining the relevance of found information to their topics, and applying the information to their assignment in a way that is both informative and useful. Each of these steps of the research process require not only a deeper understanding of how research should be performed but also a toolbox of critical thinking skills that students can use to overcome potential obstacles. Too frequently, students find themselves encountering research

roadblocks (inability to develop the correct search terms with which to find the most useful information; inability to locate free, reliable sources; inability to synthesize the information into something useable once found) with no idea of how to resolve these common problems. This leads to frustration and may cause students to resort to the use of more accessible (but ultimately much less viable and pertinent) information materials.

Making critical thinkers of burgeoning researchers in an age of information overload and "fake news" requires three steps to help students and faculty alike reevaluate the nature of research as it is viewed in and outside of the classroom:

1. Explain the consequences. By providing examples of the impact that false or bad information can have on a community (whether it be within your own institution, within your home state, or even on a national/international level), students will be more aware of why thorough evaluation of research matters in the long term. Locating real-life examples of faulty research (e.g., Andrew Wakefield's debunked research on autism and vaccinations) and its massive impact (the birth of the entire anti-vaccination movement) will help bring a sense of reality to this often nebulous topic. Educators may even consider charging students with finding examples of research fraud and charting its impact themselves as part of this learning process.

2. Encourage researchers to be skeptics. More often than not, students are unaware of just how much of the information they find online is intended to mislead them in some way. Even information that does not intend to be disingenuous ("misinformation")

exists in droves, thanks to a surplus of non-expert authors and open source, self-funded publishers on the web. The first component of this step is to spend time with students explaining the differences between viable information, misinformation, and disinformation (information presented with the purposeful intention of misleading the reader). Exploring the nature of bias, satire, and viral content will provide students with a stronger understanding of the pitfalls of online information use.

Following this introduction to the large variety of faulty information available to them, students should be provided with a practical tool they can use to determine the overall viability of a resource. The CRAAP test—as originally developed by librarian Molly Beestrum of Dominican University— is a great example of such a tool. By

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6 Reasons You May Not Graduate on Time (and What to Do About It)

GRADUATING FROM A four-year college in four years may sound like a fairly straightforward venture, but only 41 percent of students manage to do it.

That matters. The longer it takes, the less likely a student is to make it to graduation: A quarter of students drop out after four years, according to the National Student Clearinghouse Research Center, and most say it's because of money. Cost, indeed, is a major issue for many families — in-state tuition and fees run $8,940 on average at public institutions, $28,308 at private ones. Many of those who finish in five or six years have either unnecessarily drained their parents' bank accounts or end up in a lot more debt.

We asked educators to identify the biggest obstacles to a timely graduation. They talked about students who aim for a four-year finish but fail to take the right courses in the right order. Other students conclude that graduating in four years isn't so important, and cut back on classes to make more time for play.

Here are the six roadblocks most cited, and ways to tackle the problem.

Working Overtime: Quit After 25 Hours

There is no doubt that a student debt crisis exists in the United States, and an entire generation is buckling under its weight. But that doesn't mean debt should be avoided at all costs, experts say.

"Students who are worried about debt sometimes work more and then reduce their course load," said Robert Kelchen, a professor of higher education at Seton Hall who studies student debt. "But by working instead of studying, they may find it more difficult to graduate on time."

About 40 percent of undergraduates work 30 hours a week or more, though a new study finds that more than 25 hours can get in the way of passing classes, especially for low-income students. Only 45 percent of students who work more than that are able to keep their grade-point averages above 3.0, according to the Georgetown University Center on Education and the Workforce. The percentage goes down as the hours go up.

Dr. Kelchen makes the point that income-based repayment plans introduced by President Obama allow students to manage their debt. Some universities, too, are offering incentives to keep students from working too much. Temple University gives $4,000 grants to eligible students who agree to work no more than 15 hours a week off campus.

Melanie Tucci calculated that she would have to work about 30 hours a week as well as take out loans to make it through college when she started at Temple in 2014. With the "Fly in 4" grant and other scholarships, she was able to quit her two jobs, one in retail, one in an office. Instead, she has worked 12 hours a week at internships connected to her career interests.

"I've actually been able to take 18 credits some semesters," said Ms. Tucci, who will graduate in 2018. "It's allowed me to focus more on my schoolwork. I could never have done it all if I was working at some retail job 30 hours a week."

The 12-Credit Fallacy: Take 15

Most colleges define a full-time course load as 12 credits a semester, which is, not coincidentally, the ceiling for receiving the maximum Pell grant and most state financial aid. But degrees usually require 120 credits. Do the math — most students don't, and it's difficult to catch up: You need 15 credits a semester on average to get through in four years.

"It shouldn't really surprise us, but it is remarkable how many students simply aren't made aware of what they need to do to graduate on time," said Rebecca Torstrick, assistant vice president for academic affairs at Indiana University, which last fall began dangling a financial carrot in the form of banded tuition: Students can take up to 18 credits for the price of 12. Many public and private universities have similar setups, moving away from per-credit tuition to a flat rate for 12 or more credits.

It's all part of an awareness campaign called "15 to Finish," pioneered at the University of Hawaii in 2012, that has taken hold in dozens of states.

Taking more credits has benefits other than cutting time to a degree. Since 2015, when Florida State University began to counsel incoming freshmen on the wisdom of 15 credits, those who took the advice have actually earned higher G.P.A.'s.

Transferring: You'll Lose, Usually

How can this be: Most students need more than four years to graduate yet end up taking, and paying for, many more credits than they need. Colleges and universities usually require 120 credits for a bachelor's degree but students graduate with about 135, on average, according to data compiled by Complete College America, a nonprofit research and advocacy group.

Some states' figures are even higher. Students at regional state colleges in New Mexico graduate with an average of 155 credits.

One reason is the difficulty of transferring credits from another university or a community college. A third of students transfer at one point in their college careers. Nearly 40 percent of them get no credit for any of the courses they have completed and lose 27 credits on average — or about a year of school, according to a 2014 federal study.

Many colleges have developed articulation agreements to honor credits earned from other institutions. But often that isn't enough. A university may accept the credits, but the department of the student's major may not — and at most colleges, the decision rests with the department.

Even within a system, credits may not be accepted. One four-year college within the City University of New York, for example, may not accept credits toward a major from another. That's because professors control syllabuses for their courses. A course that counts toward an English major at York College may be heavy on analytical writing, while one at John Jay College, even though part of CUNY, requires research competency. (To help address the problem, in 2013 CUNY designated that three courses in each of its most popular majors would count toward requirements on every campus.)

Unfortunately, the only way to know for sure whether credits will transfer to a new college is to ask. Most administrators will want to review a syllabus from your former school for comparison. And make sure to ask about credits within a major.

"Sometimes students just look at how many credits will transfer and make their decisions from there," said Maria Campanella, director of the health sciences office of student services at Stony Brook University of the State University of New York. "What they really need to ask is, 'How many will apply to my degree?'"

Major Problem: Don't Veer Off Course

Picking courses can make students feel like kids in a candy store — there are so many possibilities. The process is overwhelming, with thousands of classes. "Archaeology of Human Origins" may sound interesting, but if you wait too long to focus on your economics major, you may not get in all the requirements you need. The problem is magnified if a prerequisite is offered only in the fall. Missing one means waiting a full year. And what if it's full? Expect even more delays if you change majors.

"We think what they want is flexibility, but actually what they need is structure," said Tom Sugar, president of Complete College America. "We think we're doing them a favor by letting them explore without guidance, but we're really steering them away from success."

Colleges have begun to address the problem by pushing students to declare

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majors earlier, or at least narrow their areas of interest, so that they can chart out a path to a four-year finish. Toward that end, digital advising tools have become increasingly common.

Instead of scrolling through a course catalog, students at many colleges can now create schedules on interactive maps that aid in fulfilling core and major requirements. Let's say you are a Florida State University student looking for a class to fulfill its history/social science requirement. Click on course options on its degree map and it tells you which requirements each course fills. Instead of taking some random history course, you might choose "History of Science," which counts toward both F.S.U.'s "Diversity in Western Culture" requirement and the state-mandated writing requirement.

No Social Life: Join Something

Some students slowly disengage because they never really feel part of a college community. Social isolation and depression can affect academic progress, especially for students living away from home for the first time. Studies have found that students who don't become involved in campus life, whether through friendship networks, clubs or sports, are more likely to drop out.

Sometimes students worry that committing to activities outside of classes gets in the way of doing well academically, but often it's the opposite.

Calista Damm, a freshman at the University of South Florida, joined the ad club, the film club and one called Swipe Out Hunger as she struggled with her coursework, particularly algebra. "It's been really important to me," she said. "It keeps me kind of sane when I go to my clubs. I'm not just thinking about homework 100 percent of the time." She added: "It can be hard to meet people freshman year so it helps with that, too."

Living-learning communities, which house students who have similar personal or academic interests, have long been a strategy to help students develop social networks and more easily find academic and emotional support. Universities report more engaged students and improved academic performance, especially for underprepared students.

Some universities now require that first-year students live in such a community. At the University of Iowa, all resident freshmen must sign up for one or more than 25 living-learning communities. And because adjustment to campus life can be especially difficult for underrepresented students, who may feel unwelcome or stigmatized, the university has recently hired peer mentors to live in its "Young, Gifted and Black" housing and its "All In" living-learning community, opening in the fall for L.G.B.T.Q. students.

Falling Behind: Three Strikes And …

College has always been a lot to manage, but these days students are juggling more distractions than ever. They work more hours outside of class, they are more likely to commute and have family responsibilities, and now there's social media vying for their attention. All of these factors can distract from schoolwork, requiring much tighter time management. It's hard to cope.

"Many of our students did great in high school, but they come here and don't realize that you can't just study the night before for a test," said Zulmaly Ramirez, an academic advocate for first-year students at the University of South Florida. "They used to spend 80 percent of their academic time in class and 20 percent on homework." In college, that's reversed. (One U.S.F. effort: an app called "Cold Turkey" that blocks social media for an hour or two so students can study without disruption.)

Springfield College in Massachusetts wants students to take more responsibility. It has raised the stakes in an effort to force students to manage their time better; administrators call it the "three strikes rule." Students on academic probation must meet weekly with a coach, who helps them prioritize their work and connects them with tutoring services. Three missed meetings are grounds for expulsion.

"We have found that you can't just tell them that they're on academic probation; you need to press the immediacy of the problem," said Mary Ann Coughlin, Springfield's associate vice president for academic affairs. "Because it's not worth it if they're coming and treating us like a country club and enjoying the facilities, and not getting the academic benefits."

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examining the currency, relevance, authority, accuracy, and purpose of an article, students are better able to notice potential red flags within the source that may indicate a less-than-credible source.

3. Treat research like a puzzle. Presenting opportunities for research and critical thinking that push past the boundaries of a typical, boring research paper helps increase student engagement and provides a stronger framework on which to develop the research process itself. Incorporating problem-based learning and scenario-based research into the classroom environment also gives educators more of an opportunity to expose students to real-life problems within their prospective careers or the field of study itself. Asking students to work through research-heavy tasks, such as diagnosing a hypothetical patient, developing a strategic plan for a new business, rebuilding society in the wake of a large-scale disaster, etc. requires the same research skills as a topic-based paper or presentation, but with the added benefit of bolstering critical thinking skills and exposure to real-world experiences that will help students to be more successful, thoughtful professionals after their graduation.

Delving deeply into topics of information management and critical thinking development within the classroom environment requires a sacrifice of time and effort that many educators may find difficult. Thankfully, this process can be made easier via collaboration with the research and instructional librarians at one's institution. Academic librarians are already familiar with the steps of the research process and how to best present evaluation schemas to students. Taking a moment to enforce these skills and build them into the core structure of one's classroom expectations will have a positive, lifelong influence on students and their ability to find, evaluate, and use information in a more responsible and impactful manner. This is a skillset that is vital to academic and professional success. By giving students the tools they need to be critical researchers, we build the foundation for entire generations for whom the truthfulness and usefulness of information is paramount, making for a stronger, smarter society.

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