



## I Read it But... I Don't Understand It!

*Linda Russell*

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Have you ever been surprised by the seemingly low level of reading skills your students or direct reports have? You may have asked them to read something—a chapter, an article, a manual—and later discovered that they either didn't actually read it or, worse, that they did not understand its content well enough to benefit from it. The title of this article is borrowed from Chris Tovani's book of the same name and is listed in the bibliography.

Inadequate reading skills are very common in both college classrooms and the workplace. It is not so much that these adults cannot read; it is more that they are ineffective readers in the context at hand. What does this mean? How could you help?

### BACKGROUND KNOWLEDGE

To illustrate the role that prior experience or background knowledge plays in our ability to comprehend, try reading the following paragraph:

Paideia pulls to start. They come zone with a three man cup. Y picks up the disc and centers to Fink, who breaks through the cup to Bumsted. We swing up to Z on the high side, then dishy up field. Huck goes up to Seff, dishy to JJ. We reset to JayTay and Y. Backhand break to Y bidding; it's too far. Paideia centers, dumps, and sets into their offense. A big huck goes off—sky to score.

You might be familiar with the topic, or you might be able to make some guesses if you aren't sure of it. How can you figure out what this paragraph is about and what has occurred? This piece may have some words you don't know, such as *dishy* or *huck*. You may notice several words you are familiar with, but seem to have specialized meanings here, such as *pulls*, *cup*, *swing*, *bidding*, *dumps*, or *sky*. Other words like *Paideia* or *Bumsted* appear to be names of people or things, which makes the paragraph a little less clear. It might help if I gave you some definitions of terms.

- BID To make an attempt to grab the disc without concern for your own personal safety. Most often by diving or 'laying out' for it.
- BREAK To break your marker means to throw the disc past them to the side that they are covering with their force.
- CUP A defensive formation used in zone defense where three people are covering the thrower albeit only one within 10 feet of the thrower.
- DISHY A shorter pass.



- DUMP** Refers to a short pass, often back to another handler, usually used to reset the stall count. The player this pass goes to is also called the dump.
- HUCK** A long pass; often nearly the full length of the pitch and high to a tall player in the end zone.
- PULL** The throw at the start of each point that initiates play. "Pull is OB" means it landed out of bounds.
- RESET** To restart an offensive play when it's been interrupted by the defense.
- SKY** When either the disc or a person is very high off the ground.
- SWING** A lateral pass across the pitch - usually does not result in any upfield movement. This is useful to gain a better position or to reset the stall count.

With this foundational knowledge of terms, try reading the piece again. Does having this background help much with your comprehension? It will likely give you some help in piecing together a picture of what is occurring. But you still may not really know what this is about. Probably the best help I could give you would be to show you a video clip of this sport in action—Ultimate Frisbee—and to tell you a little bit about the way it works, the teams that are playing, and the names of the players mentioned. Learning something about the sport and the context in which this vignette was written will make a big difference in your understanding. Building a level of experience with the content helps you better comprehend the information.

This is how your students or employees feel when you expect them to read something and don't provide any context or background information. Even if you do help out with some vocabulary, you now can see that in itself, vocabulary is not going to help a reader overcome a lack of knowledge about the topic.

Here is a second reading for you to try.

Bowman et al. (2018) recently reported the detection of an absorption signal at  $\sim 78$  MHz in the sky-averaged spectrum. If interpreted as the signature of neutral hydrogen in the early Universe, it is the earliest of evidence of star formation in the Universe (redshift  $z \sim 17$ ,  $\sim 180$  Myr after the Big Bang). In this paper, we investigated the implications of this detection on galaxy formation theories at high redshift, largely ignoring the potential for exotic physics suggested by the anomalous depth of the EDGES signal. Working backwards from high- $z$  galaxy luminosity functions (see Mirocha, J., Furlanetto, S.R., & Sun, G., 2017), we find that typical extrapolations of the efficiency of star formation to galaxies beyond current detection limits (in both luminosity and redshift) fail to come up with enough star formation at high- $z$  to induce the EDGES signal at 78 MHz. Instead, one requires more star formation (or perhaps black hole activity) than expected at  $z \sim 17$ . There are a number of candidate sources of this "extra" radiation at high- $z$  -- in this work we focused on galaxies just beyond current detection limits, rather than invoking PopIII sources or growing black holes. We found that, if limited to sources in atomic cooling halos, the star formation efficiency in galaxies just beyond detection limits must hit a floor at a few percent in order to produce enough star formation to cause the EDGES signal at  $z \sim 17$ . An observed steepening in the galaxy luminosity function at high- $z$  (with, e.g., JWST; see our Figure 5) would provide independent evidence of this change in the efficiency of star formation (Mirocha, & Furlanetto, 2019.)



How long did you read before you stopped, got confused, or wished for some assistance? Could you decode, or say, all of the words in this paragraph? You probably saw some words with specialized meanings, like *absorption*, *signal*, *luminosity*, *radiation* and *function*. There might be some new words for you, such as *redshift*, *high-z*, *sky-averaged* or *~180 Myr*. How long did you read before you gave up? Most people who are not astrophysicists stop understanding by the end of the first sentence. Even if they stick with it, they really don't understand the significance of the findings that are reported. It is difficult to keep reading when you are not understanding what is being discussed.

Imagine a work situation in which you handed your technicians a manual for a new complicated braking system. If the technicians have much experience working with a variety of vehicle braking systems they have already learned much about the content. They have neural networks in their brains to connect and store the new information. They can better compare, contrast and analyze the new information. They are probably doing so as they read the material for the first time. If the technicians are less experienced, this background information has not been established yet and a different comprehension strategy, perhaps step-by-step directions may be necessary to lead them to full comprehension more efficiently.

These examples illustrate two important concepts about reading. First, a person can decode, or say, pretty accurately, but still not understand what is written (Kuhn & Stahl, 2003; Sabatini, Sawaki, Shore, & Scarborough, 2010; Landi, 2010; Mellard, Fall, & Woods, 2010). Second, prior knowledge is a key factor in that difference (Kendeou, Broek, Helder, & Karlsson, 2014; Stahl, Hare, Sinatra, & Gregory, 1991; Willingham, 2017). We absolutely need some experience, information, or context to truly be able to comprehend a piece of reading. So, how can we assist readers when we ask them to read something?

#### **SETTING A PURPOSE**

One helpful practice is providing some direction for the reading, such as "Read to find out why the absorption signal at ~78 MHz in the sky-averaged spectrum is important," or "Read to figure out which team has the upper hand." Setting a purpose for reading guides the reader and allows him or her to focus on one or two things rather than "anything goes." This makes a reader much more efficient, allows them to form more appropriate questions, and may positively affect their motivation to stick with a difficult or dry piece of reading. Setting a purpose for reading is considered one of the set of global reading strategies that lead to successful comprehension. For more reading on this see (Mokhtari & Reichard, 2002; Schraw, 1998; Tovani, 2000).

#### **FILLING IN SOME GAPS**

Showing a short video clip, explaining a fundamental concept, or otherwise providing missing background knowledge is another way to assist readers in making sense of a reading even if they are novices. This may include some preliminary vocabulary instruction or a "cheat sheet" for them to use that gives the definition of certain words in the context they are used. But vocabulary alone cannot suffice. If there is a related set of concepts that you know your readers are familiar with, make that



connection and let them know they should be consciously trying to notice the relationships. They will not necessarily notice that without your guidance.

### **READING IS NOT A GENERIC SKILL**

You might be surprised to learn that reading is not a generic skill that “transfers” from subject area to subject area (McConachie, Hall, Resnick, Ravi, Bill, Bintz, & Taylor, 2006; Shanahan & Shanahan, 2012; Goldman, Britt, Brown, Cribb, George & Greenleaf, 2016; ). Reading is a complex cognitive activity which depends on many peripheral conditions, background knowledge being one of them, as you saw above. A person can be very skilled at reading in a particular area, but marginally skilled at reading when faced with new concepts or new paradigms.

If we compare reading in grades 4-12 to college and workplace reading, one big difference is that although students are expected to use reading for learning in the lower grades, often the concept complexity is low. So, they can rely on their decoding skills alone to understand the material. That is, if the student can decode, or say, what is written, he or she will automatically understand it. In college and on the job this changes rather dramatically. Readers are faced with concept complexity, new concepts, and high density of concepts (i.e., new concepts that are explained using concepts and terms that were just introduced a few paragraphs earlier). Vocabulary also plays an important role; new terms and familiar words with specialized definition cause readers to slow down, stop and look things up, or skip words. In addition, the pace of reading is much faster; students are often expected to read 40+ pages each week in each of their courses. It is common for college students to get behind in their reading or avoid the reading altogether.

In the workplace, reading tasks are often reports or correspondence, but can also include instructional manuals, such as how to use equipment, tools or new computer software. It would seem that this would be an easier task than reading new concepts, but it can prove problematic because there is usually an immediate consequence if the employee has not read it correctly or thoroughly as the information is often needed in applied practice. There are often terms, acronyms, and other jargon that are unique to *each* workplace. These can cause inefficiency, time wasting, equipment breakage, and even injury in some settings. The consequences for not understanding could cost the company money, customers, market share, opportunities, and reputation. It can affect many more people than just the reader who has trouble comprehending.

### **HOW CAN YOU HELP YOUR STUDENTS AND EMPLOYEES READ BETTER?**

In an educational setting, it is the instructor’s job to help students learn the “ways” of the discipline. Each discipline has special ways of reading, writing, arguing, seeking “truth” and valuing ideas. This is called Disciplinary Literacy (see Shanahan & Shanahan, 2012, for a good introduction). The purposes reading serves is different in the various subject areas. You can help your students by clarifying the purpose for reading, as noted earlier, but also by giving them practice in extracting the important points from readings and taking notes of them. You can provide feedback either in class or individually with



comments to nudge them in the direction they need to move. This is practicing a necessary research skill—that of paraphrasing. When we comprehend a piece of reading well, we are able to explain the “gist” of it to another person. This skill of reducing a larger article or chapter down to its main points is used often in writing assignments or reports, and is dependent on accurate reading. The two skills are related; they use analogous mental processes, but they are at their cores language based competencies (Fitzgerald & Shanahan, 2000). An effective writer must paraphrase the arguments and information from experts in order to produce a quality research paper or a clear report. It is challenging to pull out the most important points accurately, omit the least important details, and make sure the resulting explanation is accurate, as well as much shorter than the original.

In the workplace, employees are often asked to report back to a group or teach others about something they have read, studied, visited, observed, or experienced. Using a train-the-trainer strategy, their report must exhibit the very same aspects of written paraphrasing. Time is short, so the report must be brief. It must accurately reflect the material/experience/observation, including the main components or points. Also, every workplace has a unique culture and set of expectations, so employees must follow the expected protocol when presenting ideas to superiors, peers, or inter-departmental work groups.

We do this “paraphrasing” all the time in regular life, but are less experienced in the formal settings of school and work. We go to a movie and our friends ask, “What was that movie about?” We are usually able to give a short recap of the plot (no spoilers) and characters without getting sidetracked by extraneous details or sub-plots. We are familiar with “stories,” so this is not problematic. We are not, however, as familiar with expository text, persuasive arguments, detailed processes, observational methods, or complex conceptual loads. For these types of reading and writing, we need practice and feedback.

Learners benefit from models and direct instruction of strategies for reading (Pearson, Roehler, Dole & Duffy, 1990; Duffy, Roehler, & Herrmann, 1988; McTighe, & O’Connor, 2009). You can give your students and employees samples of the types of reading, writing, reporting that you will expect them to work with and/or produce. If templates could be prepared to show them acceptable formats for writing, that would help them quickly adjust to the methods required. If there are prototypes you could show them, they can model their own work after them. If there are timelines that are important, share them. For example, if you know it usually takes an employee two hours to learn the new email system, then share that. Otherwise, some employees will rush through the tutorial (or skip it), thinking that a cursory glance will suffice. Give them the permission to take the time you know is needed. In college, save copies of a few of the excellent examples of work you collect from students (with their permission) so you can show the next students what excellence looks like.

One difference between a classroom and the office is that grades are given based on assessments of the outcomes in a course. However, there is an expectation that employees will read, comprehend and fully retain the information in the workplace. These workplace expectations are often unmet. There is a need to “get back to work” that supersedes a robust understanding of content for application. In the workplace there are fewer assessments of new learning.



Finally, do some checking on your students or employees learning. Ask some key questions, a summary, or a short one-on-one meeting to discuss the material. Without being too heavy handed, you can find out quickly if he or she is missing important knowledge, conceptual information, or key conclusions. You then can provide feedback and make suggestions about how to do better next time, offer techniques that are more appropriate, fill in missing background information, etc. Coaching is a good method to help your students learn to do better and to help employees gain skills and confidence. Even just providing opportunities for your charges to discuss with their peers will give them important feedback about their own understanding and hints about how more successful peers do things.

### **THE CURSE OF KNOWLEDGE**

One of the impediments to giving learners the help they need is something called the “curse of knowledge” (Heath & Heath, 2008). This occurs when you know something so well that you cannot recall what it is like to be a novice. Quickly, see if you can explain the following:

- You are teaching your child to blow a bubble gum bubble; what is the first thing they should do?
- You’re volunteering in an elementary school and a child practicing long division asks, “What do I do first again? Subtract or multiply?”
- Without touching the keyboard of a computer, explain to someone how to open a new document and change the font style and size.

When you are an expert, it is challenging to figure out what “step one” is. You do many things all together, as if it is one movement, thought process, or step, but for a novice this might involve several smaller steps and little fluency. How to break it down into the simplest set of steps is difficult. Being aware of this “curse” will help you remember that your learner may need more help and time than you thought. Novices must be allowed to observe, read/study, make mistakes, get feedback, make corrections, and practice putting steps together until fluency is achieved. That is really the only way to learn anything.

What can you do? You can make efforts to recall your own novice experiences, or take note of your students or employees novice-to-competence experiences so that you can remember to provide good conditions for new students and employees to do the learning they need to do to succeed. You can improve written and oral instructions so that step one is actually the first step for a complete novice.

### **NEXT STEPS**

We began this article discussing the issue of working with students or employees who don’t seem to read well. Although there are many ways to help people read, you are not likely able to forgo all other activities and become their reading teacher. Supplying missing background knowledge and a purpose for reading, providing awareness and practice in extracting main points by summarizing or paraphrasing, and breaking tasks down into steps that novices can follow are three ways you can be helpful in the context of your major role, be it discipline instructor or supervisor. For further reading check the bibliography, which follows.



## Bibliography

- Duffy, G. G., Roehler, L. R., & Herrmann, B. A. (1988). Modeling mental processes helps poor readers become strategic readers. *The reading teacher*, 41(8), 762-767.
- Jill Fitzgerald & Timothy Shanahan (2000) Reading and Writing Relations and Their Development, *Educational Psychologist*, 35:1, 39-50, DOI: [10.1207/S15326985EP3501\\_5](https://doi.org/10.1207/S15326985EP3501_5)
- Goldman, S. R., Britt, M. A., Brown, W., Cribb, G., George, M., Greenleaf, C., ... & Project READI. (2016). Disciplinary literacies and learning to read for understanding: A conceptual framework for disciplinary literacy. *Educational Psychologist*, 51(2), 219-246.
- Heath, Chip and Heath Dan. (2008) *Made to stick: Why some ideas survive and others die*. New York, New York: Random House.
- Kendeou, P. , Broek, P. , Helder, A. and Karlsson, J. (2014). A Cognitive View of Reading Comprehension: Implications for Reading Difficulties. *Learning Disabilities Research & Practice*, 29: 10-16. doi:[10.1111/lrpd.12025](https://doi.org/10.1111/lrpd.12025)
- Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology*, 95,3–21.
- Landi, Nicole (2010). An Examination of the Relationship between Reading Comprehension, Higher-Level and Lower-Level Reading Sub-Skills in Adults. *Reading and Writing: An Interdisciplinary Journal*, 23(6).
- McTighe, J., & O'Connor, K. (2009). Seven practices for effective learning. *Kaleidoscope: Contemporary and Classic Readings in Education*, 174.
- Mellard, D. F., Fall, E., & Woods, K. L. (2010). A path analysis of reading comprehension for adults with low literacy. *Journal of learning disabilities*, 43(2), 154–165. doi:10.1177/0022219409359345
- Mirocha, J. & Furlanetto, S.R. (2019), [MNRAS, 483, 1980](https://arxiv.org/abs/1908.09800), [arXiv].
- Mirocha, J., Furlanetto, S.R., & Sun, G. (2017) [MNRAS, 464, 1365](https://arxiv.org/abs/1708.09800) [arXiv].
- McConachie, S., Hall, M., Resnick, L., Ravi, A. K., Bill, V. L., Bintz, J., & Taylor, J. A. (2006). Task, text, and talk: Literacy for all subjects. *Educational Leadership*, 64(2).
- Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of educational psychology*, 94(2), 249.





- Pearson, P. David; Roehler, Laura; Dole, Janice; & Duffy Gerald. (1990) *Developing expertise in reading comprehension*. Champaign, Illinois: The University of Illinois Urbana-Champaign.
- Sabatini, J. P., Sawaki, Y., Shore, J. R., & Scarborough, H. S. (2010). Relationships Among Reading Skills of Adults With Low Literacy. *Journal of Learning Disabilities, 43*(2), 122–138.  
<https://doi.org/10.1177/0022219409359343>
- Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional science, 26*(1-2), 113-125.
- Shanahan, T., & Shanahan, C. (2012). What is disciplinary literacy and why does it matter?. *Topics in language disorders, 32*(1), 7-18.
- Stahl, S. A., Hare, V. C., Sinatra, R., & Gregory, J. F. (1991). Defining the Role of Prior Knowledge and Vocabulary in Reading Comprehension: The Retiring of Number 41. *Journal of Reading Behavior, 23*(4), 487–508. <https://doi.org/10.1080/10862969109547755>
- Tovani, Chris. (2000). *I read it, but I don't get it: comprehension strategies for adolescent readers*. Portland, Maine: Stenhouse Publishers.
- Willingham, Daniel (2017) *The reading mind: a cognitive approach to how the mind reads*. San Francisco: Josey Bass.