

product review

Core Concepts Periodic Table


Two school librarians take Rosen Publishing's educational e-resource for a test drive

NAVIGATING ROSEN PUBLISHING'S 2014 catalog of digital content may at first seem a bit overwhelming: it impresses both as a vibrant presentation of the company's wide array of digital offerings but it also reminds us of just how "digital" K-12 publishing has become. Or at the very least, it makes those of us still tempted to think of Rosen as merely a "publisher" realize it has now transformed into a multifaceted media company.

Perhaps more than any other independent publisher of K-12 resources on the market today, Rosen has become synonymous with high-quality, always-in-demand, constantly evolving interactive content. It has also become synonymous with digital learning solutions, produced to be fully aligned with state, national, STEM, and Common Core standards. Indeed, taking a closer look at Rosen's offerings today, it's clear that despite the versatility of its content, Rosen has become a passionate advocate of STEM learning. And they've been releasing products to prove it, too.

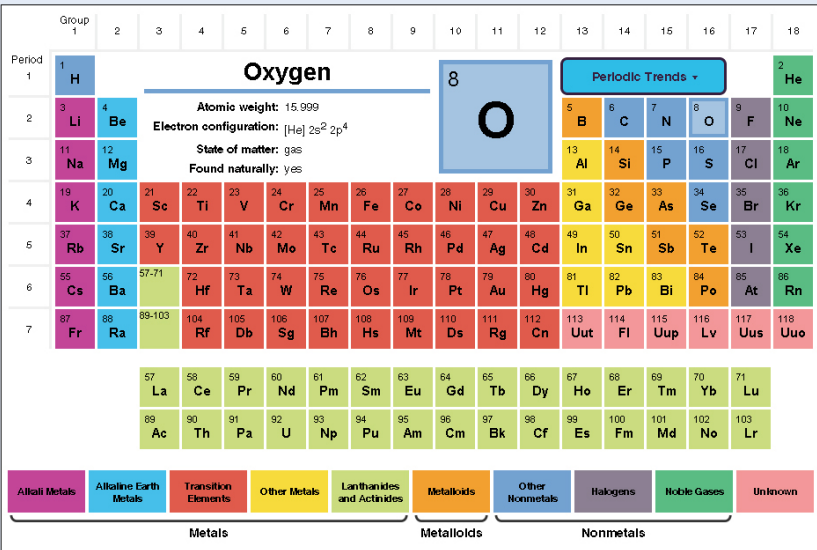
These still include books, of course, available in print and electronic formats, but Rosen's big bets these days are the interactive e-book (laden with multimedia enhancements and various embedded tools to support student learning), online databases (e.g., Teen Health & Wellness; Financial Literacy), and "suites" of products designed to promote STEM education and digital literacy in the United States.

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CORE CONCEPTS



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In this issue of *eContent Quarterly*, we focus on one resource in Rosen's Core Concepts suite, Core Concepts: Periodic Table (CCPT), which launched in 2013 and was followed with the early 2014 release of the second product in the suite, Core Concepts: Biology. We chose to focus on CCPT because the sheer complexity of the subject—the understanding of the 118 elements that make up our world—begged the question: how does a publisher (or producer of digital content) embrace a topic that requires so much hands-on exploration and take full advantage of all that technology has to offer in order to deliver a product that both educates, engages, and even entertains?

Rosen emphasizes the following about CCPT on the product's main [website](#):

- Correlated to Next Generation Science Standards and Common Core standards as well as national, state, and provincial science standards
- Articles enhanced with student-created video from Chemical Heritage Foundation
- Professional footage, extensive images, diagrams, and data tables provide an understanding of the elements, from the atomic level to the cosmic
- Interactive “Element Builder” activities reinforce skills and core ideas, allowing students to explore atomic theory and master the science behind the periodic table
- Interactive tools, courtesy of the Open University, help students explore the role of elements in the human body, the environment, and the universe
- Content creation activities encourage students to apply knowledge

- Instant translation offers articles in over fifty languages
- Text-to-speech and text highlighting to support challenged readers and English language learners
- Social bookmarking allows users to share content
- Digital flashcards and printable reference guides strengthen learning
- Lesson plans and instructional materials provide road maps for exploring the science behind the elements
- iPad, iPhone, iPod Touch, and Android compatibility

We invited two school librarians to take the product for a test drive and offer thoughts on these and other features. We also asked them to reach out to chemistry teachers at their institutions to further comment on using the product in a classroom setting. Catherine Leininger's review focuses on CCPT's various bells and whistles and serves as a good introduction to the product. It also incorporates some background information on chemistry standards in the United States and explains how the product is aligned with them. Diane Dillon's review, while also exploring the features, delves deeper into the product's pros and cons in the context of what else is available online. It also incorporates the perspective of a chemistry teacher reacting to some of the more helpful features the product has to offer to students and educators. Taken together, these two reviews, along with their accompanying commentaries, answer most, if not all, of the questions that may come up as librarians ponder whether the Core Concepts suite meets the needs of their institutions and warrants a purchase.—Ed.

Core Concepts Periodic Table

review 1

by Catherine Leininger

REMEMBER WHEN WE were shipped the CD with the Oregon Trail on it or *The Encyclopedia of Animals*? We popped the CD into our computers and the exploration was on! Learning happened by playing and following the story and coming out at the other end, having learned a lot without seeming to have worked at it. With all the recent excitement of putting content on the Internet, whether excellent or not, and the rush to digitize textbooks, the creation of true learning and teaching software has taken a back seat to simply displaying content.

Rosendigital.com has made a great comeback for teaching software with their Digital Resources & Common Core Support for 21st Century Learners. This suite offers Life Skills Tools including Teen Health; Digital and Financial Literacy; Power Knowledge Science Suite; Interactive E-Books; Character Strength; and Ancient Civilizations. The final product—Core Concepts Periodic Table—is useful for both students and teachers because it conveys chemistry information with interactivity and multimedia that students can comprehend and enjoy.

Starting with a beautifully colorful and graphically clean presentation of the periodic table of elements, the splash screen is the hub for navigation of this product. Hover over an element symbol square and the software presents the atomic weight, electron configuration, state of matter, and whether the element is formed naturally or not. Element groups are color coded and listed along the bottom as well as in the chart. Click on the element or element group and you are taken to All About the element or group which gives you an overview, a video, and several Rosen content articles—some short and some long. (See figure 1.)

FIGURE 1.
Core Concepts Periodic Table

The screenshot shows the 'CORE CONCEPTS Periodic Table' website. At the top, there is a navigation bar with tabs: 'Browse A-Z', 'Element Builder', 'Explore, Create, Learn', 'More About the Periodic Table', and 'Resources for Teachers and Librarians'. A search bar and a 'Periodic Trends' dropdown menu are also present. The main content is a periodic table with elements color-coded by groups. A legend at the bottom categorizes elements into Metals, Metalloids, and Nonmetals. The website footer includes 'About Us', 'Editorial Policy', 'Privacy Policy', 'Terms of Use', 'Contact Us', and 'All information on Core Concepts: Periodic Table is for educational purposes only. © The Rosen Publishing Group, Inc. 2014'.

The All About element articles are divided into subjects which are listed on the left side so you can jump around. They all include graphics or pictures or videos. They have a link to Resources, Glossaries, and For Further Reading, including citations back to sources. The articles are well written at a 6–12-grade reading level, so they are not too difficult. They include links to other articles, other elements, groups, and vocabulary words. Essentially the articles create an online textbook, but the linkages make it interactive and very student-friendly. As a chemistry teacher says, “This has all the material from my digital text, but in a much better format.”

The five tabs at the top of the product take you to other areas for students and teachers. Browse A-Z navigates you to an alphabetic listing of the elements and groups, which in turn takes you to the All About page for the element or group. The third tab, More About the Periodic Table, has just the groups and Mendeleev, the inventor of the periodic table, listed so that you can jump to their All About page.

FIGURE 2.
Element Builder

The screenshot shows the 'Element Builder' interface. At the top, it says 'CORE CONCEPTS Periodic Table' and 'ROSEN digital'. The main area is divided into 'Atom' and 'Element' sections. The 'Atom' section shows a Bohr model with two shells and two protons in the nucleus. The 'Element' section shows the element Helium (He) with atomic number 2. Below the element information is a periodic table. At the bottom, there are controls for adding or subtracting protons, neutrons, and electrons.

Under the second tab, Element Builder is at the heart of the product’s interactivity. (See figure 2.) Start with the tutorial that begins with the hydrogen atom—1 proton and 1 electron and lets the student add or subtract either one to see what happens! No chemicals or explosions necessary! And they sneak in some information about ions, isotopes, instability, and radioactivity along the way. The sound is a little Johnny Bravo, but luckily can be turned off! At the end of the tutorial you can earn a badge or take a quiz.

From this point in the Element Builder a student can take other challenges. Unfortunately, the student has to progress through the challenges sequentially once they have entered the tutorials. The program does save your spot and allow you to reenter where you left off rather than start over. If a student would rather try Free Build, they need to enter the Element Builder using that button or come from one of the element pages. There are no help or hints when you enter this way, so it is a challenge to make new elements and isotopes. At the end, you can access a list of all the student achievements and badges as a way to see what progress has been made.

The third tab on the splash page is Explore, Create, Learn. The first choice takes you out of the product to The Open University—always a risky move—but the material is interesting and shows the practical application of elements in the earth, the body, and within “everyday stuff.” Resources to help students put together a multimedia presentation, a podcast, or a video are on this page. But the third choice, Explore the Video Gallery, was my favorite spot. These videos are also included on the All About element pages. Using brief professional- and student-created videos, you can gain a snapshot about the element or group of elements very quickly and with something memorable to help you retain the information. Periodic table flashcards include the basic elements with numbers,

CCPT and Chemistry Standards

CHEMISTRY STANDARDS BEGIN in sixth grade, within the Physical Science: Matter and Motion topic when the concept that “all matter is made up of small particles called atoms” is taught and the ninety naturally occurring elements are identified. The concept of compounds—elements joined together—is also introduced. Seventh and eighth-grade standards build on these concepts with the introduction of the difference between pure substances and mixtures and the differences between acids and bases. The idea of element groups—metal, nonmetal, and nonreactive gases—becomes important with their properties and position on the periodic table emphasized. Using Rosen’s Core Concepts Periodic Table, these concepts are easily shown and taught in a colorful and hands-on manner that middle school students will like.

Chemistry becomes its own course of study with a two-semester syllabus in the high school standards. CCPT can be very useful as either an introduction or a review of concepts taught in sixth, seventh, and eighth

grades—atoms, molecules, and compounds. These initial concepts are expanded in the high school standards to include the parts of the atom—protons, neutrons, and electrons as well as the relationships between what makes up an element and its position on the periodic table. The Element Builder, with its hands-on interactivity, would be very helpful to students and introduce them to the next step of ionic, covalent, and metallic bonding between elements.

Further reading on each of these topics is provided in the All About pages, including background on the evolution of atomic models and theory. The lesson plan *Introducing the Atom* includes these requirements. General scientific process and scientific inquiry requirements are also addressed throughout. Of course, Reading and Writing for Information ELA (English Language Arts) standards and students’ ability to integrate technical information expressed in words and via diagrams, flow charts, or multimedia is an integrated part of this product. —*Catherine Leiningner*

weight, state, and a picture of the atom for class or group review. A link to Element Builder completes this area.

What a lot of choices a teacher has! Each student can be assigned an element to research or make a project video about; groups can work collaboratively on element groups for an interactive multimedia presentation; through the interactive Element Builder students can explore element ions and isotopes; or teachers can use one of the prepared lesson plans under the Resources for Teachers and Librarians tab to lead them through a class assignment.

The product provides two lesson plans with supporting graphic organizers. The first lesson introduces atoms and their structure and how adding or subtracting parts of these elements changes the element. One of the activities is a card game where you choose the action and the team has to guess the result. The second lesson introduces the organization of the periodic table and the activity has groups constructing their own model using their understanding of how the elements relate to each other.

Both lessons use and reference the Rosen Core Concepts Periodic Table to learn, practice, and to find answers to questions. Many more lesson plans could be developed, but the two provided support the first three to five days of teaching the periodic table in an interactive, multifaceted way that should be interesting to students and allow them some hands-on time as well.

Also available in the Resources for Teachers are Curriculum Correlations, which suggest elements associated with your state’s standards and point you to the All About element or group page. Under Reference Guide, you will find a

full-color printable Periodic Table of Elements with the key to atomic number, atomic weight, element symbol, and element name.

Resources for the librarians include materials to promote and manage the product to students and teachers, including a Customer Newsletter, Online Training (a short PowerPoint presentation), User Guide, Usage Statistics, and Promotional Materials section (bookmarks and posters). They also provide a Web Button which you can put on your school's digital resources page.

Carol Noffsinger, chemistry instructor at Upper Valley Career Center, offered some thoughts about the product for the purposes of this review. She said that 60 percent of the chemistry she teaches is dependent on the periodic table, adding that “to be able to give students a tool such as CCPT, which is a consistent model, available at school or at home, for them to be able to see it and point to it and interact with it—that consistency is invaluable.” The analogy she draws is that the periodic table is to chemistry as a calculator is to math; you can work the problems through without it, but the tools make the learning much easier.

Indeed, CCPT turns chemistry, which can be inaccessible for the novice, into something interesting and interactive. I ended up with lots of questions and wanted to start mixing elements from different parts of the table. I also was led to watch more videos and read more information about the more obscure elements to see how they fit in. Hopefully your students and teachers will, too.

ABOUT THE AUTHOR

Catherine Leininger has been a school librarian at Upper Valley Career Center, Piqua, Ohio, for fifteen years and before that worked as a software engineer and a product and project manager at LEXISNEXIS in Dayton, Ohio. She has served on the OELMA (Ohio Educational Library Media Association) Board and the INFOhio Governing Board for statewide digital resources. She especially appreciates the high school students she works with at a career center and their need for instructional materials that are hands-on and interactive.

review 2

Core Concepts Periodic Table

by Diane Dillon

SITTING DOWN TO review Rosen Digital's new online product, Core Concepts Periodic Table (CCPT), was no easy feat this holiday season, having to compete as it did against a backdrop of traveling and feasting, shopping and celebrating, bowl games and board games that are the hallmarks of America's almost 400-year old holiday, Thanksgiving. The clean, inviting, and clutter-free home page of Core Concepts Periodic Table won me over, as it will your students. It is colorful, has just the right amount of organizational links, and is easy to navigate. Students don't always focus on authority, but Rosen Publishing's track record helps teachers and librarians rest assured that the content is appropriate for the K-12 market.

As we all know well, today's students are unintimidated by bells, whistles, links, tabs, and the like, but I prefer the advertising-free modus operandi of a database like this one. I also like Rosen's attractive, easily accessible points of entry into their thorough and reliable product. Learning about the periodic table and accessing information about groupings of elements and their properties via an interactive tool is a match made in heaven. A database allowing multiple users to browse it, no lost volumes worries, and 24/7 everywhere access add value to the research process and the development of information literacy skills, trumping other considerations for tighter-than-ever budget dollars.

Users will first want to take in the organization of the database, beginning with the four student links on the top navigation bar. Clicking on the first, Browse A-Z, reveals an interactive topic index to not only the 118 elements, but also important scientists, scientific processes, and a myriad of articles relating to better knowledge and understanding of the elements and their role in the sciences and day-to-day living. Examples of related topics include absolute zero, iodine deficiency, and semiconductor. The results list displays the part of the sentence where a user's search term first appears and once a student selects a link to follow, the search term is highlighted throughout the article. The Browse A-Z link is thorough and user-friendly but it is not a true index. A user searching for an explanation of an ion, for example, is better served by the omnipresent and highly visible query box.

The second link takes one to Element Builder, an interactive instructional animation teaching atomic numbers, atomic weight, ions, isotopes, and stability. Each element-building activity is followed by a short interactive quiz. I enjoyed altering proton, neutron, and electron numbers, changing one element into another and taking the quizlets. The instruction, however, is overly simplistic and students may stumble on a different isotope than the one intended. Allowing more flexibility in the design and a heads-up about possible isotopes would allay misconceptions that might develop. Students may be thrown by why the element xenon did not form an isotope, following the directions and the hint. This activity would work well as an instructional tool with chemistry teachers explaining the varying results.

The next link, Explore, Create, Learn, takes one to The Open University, an institute of higher education located in the United Kingdom. The app includes superb videos and interactives such as "Elements That Changed the Course of History," "Body Chemistry," and "Elements of the World." This link also includes making podcasts, videos, and multimedia presentation jumpstarts and two sets of flashcards. It is, however, The Open University content that has the potential to engage even the most reluctant student scientist with the marvels of the elements.

The final student link takes users into the descriptions and properties of element groups, illustrating that the peculiar shape of the periodic table was developed by grouping the elements based on shared properties. Like the links to the elements themselves, these topics include a series of specific articles including a

topic-specific glossary, links to external organizations and agencies, as well as a bit of a recommended reading list.

Getting back to the periodic table itself, the “meat and potatoes” of this product are the interactive links to the elements and the color-coded periods and groups comprised of elements sharing important properties. Users are a click away from significant articles and accessible, informative opportunities for learning. Hovering the cursor over an element reveals its basic properties, while clicking on the element takes one to a list of resources. It is this series of articles that makes CCPT more valuable than many free periodic table databases on the Web. The basic article includes a graphic of the element, introductory information, and often, a short (usually under thirty seconds) video or a longer award-winning, student-produced video. Other resources include the discovery and history of the element, and its role in the sciences, the environment, and in the human body. The element silver, for example, includes articles about the discovery of silver, its properties, compounds, and uses that are sprinkled with images, graphics, and video clips.

In spite of some very appealing features, CCPT is not without shortcomings. The student-produced videos should have been an option to video content on the site, but were instead, aside from very brief video clips, the only video content on the site. While they are award-winning student videos, the quality is uneven and the instructional value is sometimes unclear. Also, while there are the Element Builder interactive and quizzes, there was little in the way of additional animations or hands-on learning activities. Another drawback to the database is that not all elements are developed as thoroughly as they might be. Tungsten, for example, has no additional articles beyond the base article and is without glossary or links to other agencies or recommended reading suggestions. A quick Google search locates the U.S. Geological Survey article on tungsten and includes a link to the International Tungsten Industry Association. While the tungsten student-produced video is well done and informative, it is the only access point for additional details about the element.

Most of the elements have a resource list that takes the user outside of the Rosen product. Sometimes these links are valuable explorations of related content and other times, too often, they are dead ends, taking you to a site's home page rather than to direct links where recommended information is readily located. Using the recommended site's search box yields an extensive list of articles, but often in random keyword fashion rather than a subject-access way. Students may puzzle over which link provides a valuable extension to the information already included in Rosen's database. These resources and websites are, in many cases, great links, but the onus falls on the user to mine the site for relevant gems of information and wade through a results list, an often daunting task more suited to accomplished researchers. I found great information on oxygen on the NASA site but had mixed results on some of my other searches. Better to pick one or two outstanding links and cite them directly than take users to agency home pages. The option remains for students to use the site's query box to initiate additional content searches. Also, the further reading list is uninspired, for

A Teacher's Feedback

REBECCA TOUKONEN, A chemistry teacher who recently left teaching at Nordonía High School to become an editor at educational publishing company Bright Ideas Press, offers the following feedback on CCPT:

- families are colorfully displayed
- description of each family can be accessed without leaving the table; this makes the product compatible as a teaching aid on a smart board
- abundant information about each element is readily available and could be used to have students research information comparing elements within a certain family or contrasting metals with nonmetals
- the overlay of arrows illustrating the periodic trends is very helpful for introducing the trends, although it should be noted that only the general trend is illustrated, making the product more appropriate for lower-level chemistry classes
- the tutorial that comes with the element builder may mislead students about the relationship between protons and neutrons; however, a free build feature visually demonstrates that changing the number of protons changes the identity of the element; if properly used, this feature could reinforce that protons and neutrons are not always equal and that while the number of protons cannot change for any given element, the number of neutrons can
- the electron portion is a bit deficient; it will allow you to add electrons and it will tell you if the corresponding element has a positive or negative charge, but it does not indicate the quantity of the charge (i.e., two extra electrons means -2 charge).

example, directing readers to a book on rocks and minerals rather than any number of specific books on the element in question.

There are many free Internet sites introducing the periodic table, and these range from rather elementary ones, such as the authoritative Annenberg's Learner.org site, to more advanced sites such as the Royal Society of Chemistry or the Los Alamos National Library interactive periodic table sites. Some are awash in animations and hands-on activities, while others include many quality videos. The Scientific American site (www.scientificamerican.com/article.cfm?id=chemistry-the-elements-revealed-interactive-periodic-table) includes a fun fact for every element, such as the tungsten fun fact: this element has the highest melting point of all elements, at 6,170 degrees Fahrenheit (3,410 degrees Celsius), and is the heaviest element to be used by living organisms. It is one of the few elements that commonly go under two names, the other one being wolfram—hence the W symbol. The Periodic Table of Comic Books is entertaining, if somewhat less instructional.

Bottom line: Rosen Digital's Core Concepts Periodic Table has much to recommend it. A feature I did not mention yet is that the last link on the top navigation bar links to resources for teachers and librarians, including teaching tips and lesson plans. Each of the numerous articles is cited in MLA style and APA style. A periodic trends link reveals the overall organization of periods and groups.

In conclusion, Rosen Digital has created an ideal database for young researchers, particularly because of its abundant, lengthy articles rather than property listing. Students around the country explore an element in detail, just the kind of authoritative, accurate detail they will find here. The amount of text beyond the property stats and the clean, uncluttered ease of access are the elements that place Core Concepts Periodic Table at the head of the pack. ☺

ABOUT THE AUTHOR

Diane Dillon is a retired school librarian and library coordinator who spent the bulk of her career as a high school librarian in the Nordonía Hills City School District, introducing digital access to teachers and students and moving them to quality resources, authoritative articles, and databases that demanded the development of critical thinking skills. She also simultaneously worked as a Know It Now Librarian (24/7 online reference service) for around seven years in Ohio. Today, she researches and writes for a growing educational publishing house, Bright Ideas Press (BIP), in Beachwood, Ohio. BIP publishes consumable materials for the K–8 market, including workbooks addressing math and language arts common core standards.