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Expedition:LEARN!™

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Britannica Education's *Expedition: Learn!*

Foundational Research

Britannica Education's *Expedition: Learn!* is a digital resource for elementary and middle school classrooms that builds literacy while developing standards-based content knowledge in science and social studies.

Teachers in the 21st century must meet the needs of an increasingly diverse student population that represents a wide array of cultural and linguistic backgrounds, economic statuses, cognitive and psycho-emotional functioning, interests, home environments, and learning styles. Equity is essential to broad success, and equitable practices require that all students are expected to meet high standards for learning and have access to high-quality instruction. To ensure that all students thrive, each must receive differentiated supports specific to their individual needs and strengths (Darling-Hammond, 2015; National Academies of Sciences, Engineering, and Medicine (NASEM), 2020; Souban & Round, 2015; Tomlinson et al., 2003; U.S. Department of Education (USDOE), 2013).

A well-known, evidence-based, and deliberate approach to teaching, differentiation entails flexible adjustment of instruction in accommodation of students' varying readiness, interests, or learning profiles (Tomlinson, 2001, 2004, & 2014). A differentiated classroom is an inclusive community recognizing and nourishing individual students with an appropriate, motivating balance of challenge and success and one where all learners – those struggling and those advanced – are supported (Lawrence-Brown, 2004). A teacher who differentiates effectively matches content (from basic to complex), level of cognitive demand, assessment (type and method), and choice of product (or program) to each student's specific needs, facilitating ongoing, continuous progress for all students with the ultimate aim of developing lifelong learners (Roberts & Inman, 2023).

Effective digital learning environments utilize technology to improve differentiation of instruction via such features as customized content, real-time assessment, and prompt feedback (Curtis & Werth, 2015; Johnson et al., 2022; Turley & Graham, 2019). Scaffolding within technology-based instructional programs has been shown to increase learning (Zydney, 2010).

Expedition: Learn! was designed upon firmly established, evidence-based principles and practices to optimize outcomes for all students by meeting their needs through individualized support and engaging their interest in learning about the world around them. The following are key strategies from the research literature that underpin this new program:

- Meeting the needs of all students through differentiated literacy instruction and leveled texts
- Improving learning through multimodal and multimedia instruction
- Sparking student interest and motivation with engaging, dynamic content
- Embedding literacy development in the context of science and social studies learning
- Bridging language learning with translated texts and vocabulary support

Meeting the needs of all students through differentiated literacy instruction and leveled texts

Research demonstrates that differentiated instruction (DI) can significantly improve student achievement and engagement and decrease achievement gaps within classrooms, specifically in reading fluency and comprehension (Allan & Goddard, 2010; Beecher & Sweeney, 2008; Jones, Yssel, & Grant, 2012; Pozas, Letzel, & Schneider, 2019; Reis et al., 2011; Subban, 2006; Valiandes, 2015). Advances in the application of brain science to instructional practices further support the case for differentiation (Sousa & Tomlinson, 2018). However, implementation levels of DI have remained low (Latz, et al., 2008; Smit & Humpert, 2012; VanTassel-Baska & Hubbard, 2018). Among the greatest impediments to differentiation are time (both planning and instructional) and availability of a range of varied reading levels that develop content knowledge and support rigorous learning goals for every student (Reis, et al., 2004; Roberts & Inman, 2023).

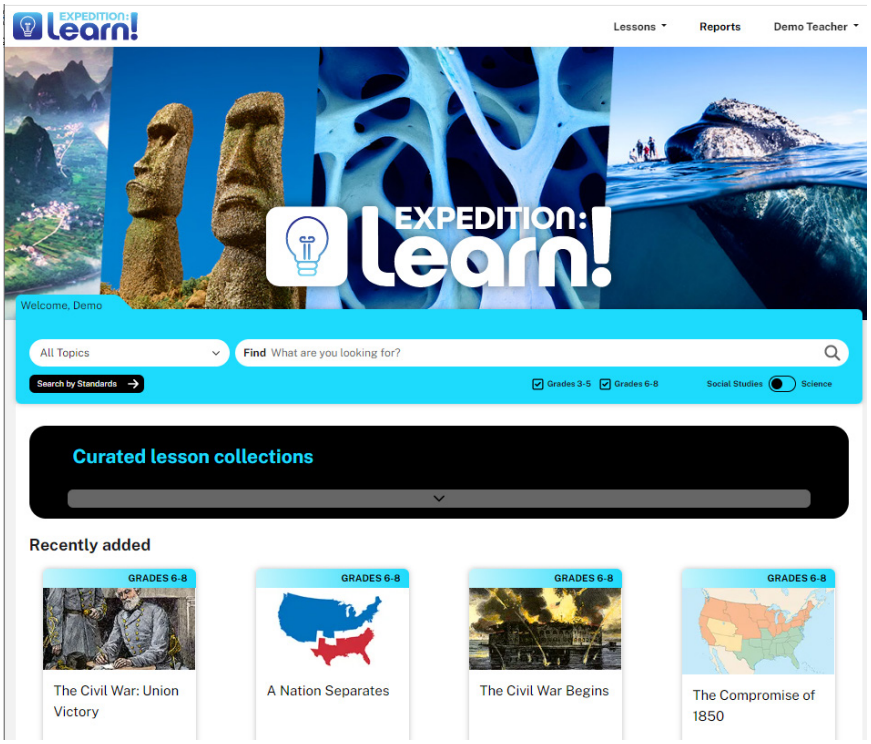
One effective means for teachers to incorporate differentiation into reading instruction is via scaffolding. Conceptually, both DI and scaffolding grow out of long-held constructivist education philosophies, including Vygotsky's: "Optimal learning takes place within students' 'zones of proximal development' – when teachers assess students' current understanding and teach new concepts, skills, and strategies at an according level" (1978, p. 86). Scaffolds provide temporary supports that aid individual students by bridging gaps between their current proficiency levels and ultimate learning targets, with a related aim of gradually decreasing the amount of support provided until students are able to work independently (Carolan & Guinn, 2007; Graves & Avery, 1997). Numerous studies have shown that scaffolding yields positive student outcomes, including improved reading comprehension (Clark & Graves, 2008; Fretz et al., 2002; Kim & White, 2008; Lutz, Guthrie, & Davis, 2006; Rosenshine & Meister, 1992; Simons & Klein, 2007). Indeed, for learning to occur, activities must be at the right level for the learner (Tomlinson & Allan, 2000).

Appropriately leveled text is key to effectively developing literacy and reading engagement for all students (Fisher & Frey, 2015; Fountas & Pinnell, 2012), including to build content area literacy through informational texts (Guthrie & Klauda, 2012; Lee & Spratley, 2010). Research continually shows that students read better when they read independently and voluminously – yet simply having students read more will likely not improve skills or habits unless the reading happens with fluency, accuracy, understanding, confidence, and enjoyment – as well as a balance of challenge and competence that minimizes struggle (Ankrum, 2022; Allington, 2014; Allington & Gabriel, 2012, Guthrie, Hoa, Wigfield et al., 2007; Krashen, 2004 & 2011; Reutzel & Juth, 2014; Snow, Burns, & Griffin, 1998).

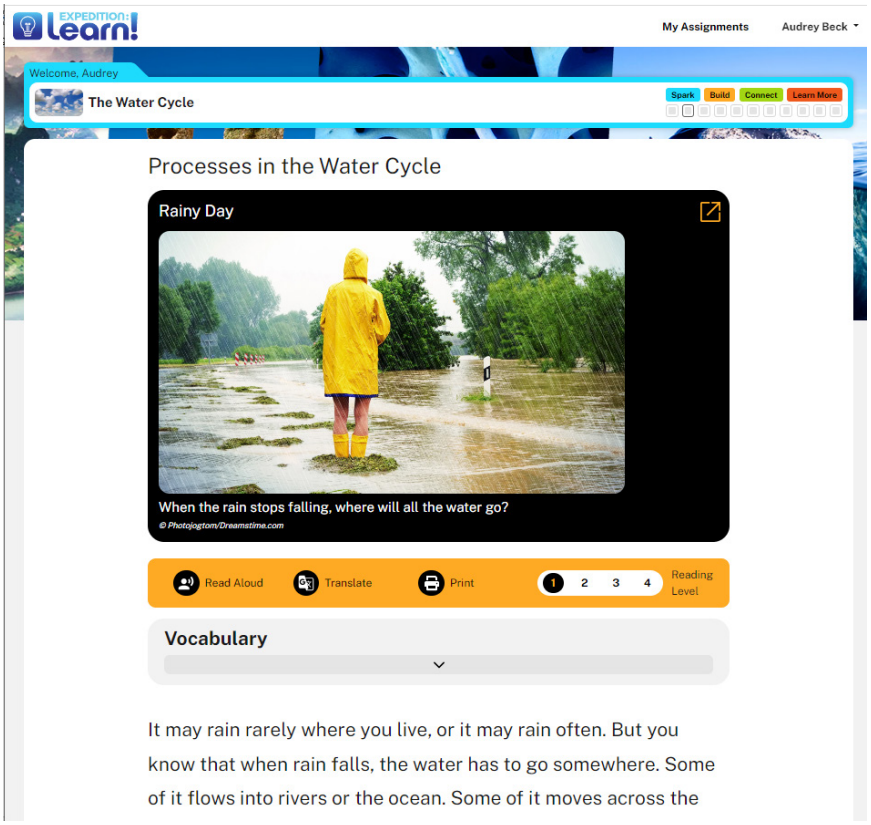
Additionally, the provision of appropriately leveled texts as part of literacy learning supports students' self-efficacy and autonomy, thereby guarding against the persistent, widespread decline in interest and engagement in reading at the secondary level, which in turn has been associated with general academic failure and withdrawal (Ivey & Broaddus, 2001; Greenberg, Gilbert, & Fredrick, 2006; Guthrie, 2008; Wigfield, Gladstone, & Turci, 2016; Wilhelm & Smith, 2014). Researchers posit that a contributing cause of this detrimental trend is the common mismatch between individual students' reading proficiency levels and the instructional opportunities afforded to them (Pitcher et al., 2007; Reis et al., 2011).

From RESEARCH to PRACTICE

Expedition: Learn! effectively facilitates differentiated instruction. Learning material can be customized to meet objectives for a whole class, small group, or individual student, whether as part of core content building, additional support outside of school, or enrichment activity. Teachers can individually assign lessons based on student needs. Lessons are self-paced, and each student's tasks and progress are made clear, fostering agency, autonomy, and goal setting and attainment.



Further, the program provides four different Lexile levels for the text accompanying each lesson/topic, allowing teachers to select the most appropriate option to match specific language proficiencies and meet students where they are.



Improving learning through multimodal and multimedia instruction

For the past 25 years, a consensus has built around the understanding and practice that people learn better through a combination of verbal and visual inputs. Concurrent advances in computer and communication technology enable delivery of multimedia content – words (both text-based and auditory) and graphics (both static and dynamic) – that supports what cognitive theory and research evidence indicate are best instructional practices (Clark & Mayer, 2016; Eitel, et al., 2013; Mayer, 2013; Means, et al., 2010; Pashler, et al., 2007; NASEM, 2018; Yu & Liu, 2022). Multimedia is integral to Universal Design Learning (UDL), a framework for curriculum design and educational environments that provides all individuals, regardless of ability, age, gender, or cultural/linguistic backgrounds, equal opportunities to learn. UDL is grounded in the three primary neurological networks (affective, recognitive, and strategic) and enacts the following principles to flexibly and effectively address diverse learner needs:

- **Multiple means of engagement** stimulate learners' interests by offering choices of content and tools and motivate learners by making objectives purposeful and offering adjustable levels of challenge.
- **Multiple means of representation** present a variety of methods (sensory, linguistic, graphic, etc.) for learners to acquire information and provide a range of supports to aid access and understanding.
- **Multiple means of action and expression** provide learners with alternative ways to navigate the learning environment skillfully and to demonstrate what they know and can-do using tools to construct, compose, and communicate.

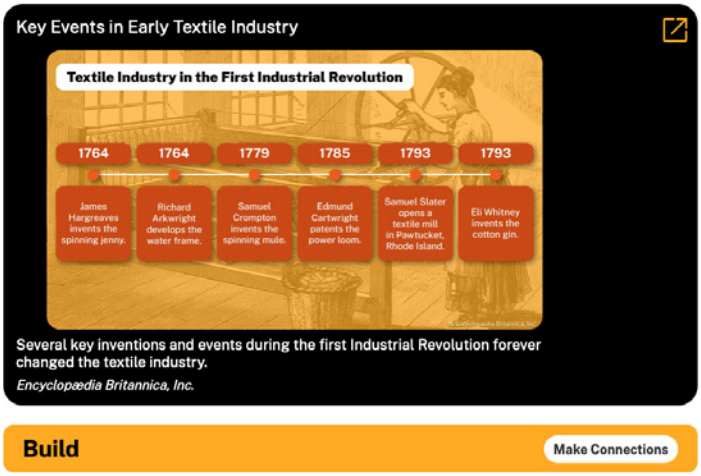
Providing multiple access points, both linguistic and nonlinguistic, can increase reflection and recall for all students, and English learners (ELs) in particular (Marzano, Pickering, & Pollock, 2001; Sodrenko, 2010; Yu & Liu, 2022). Multimodal instruction – encompassing both presentation of content in the course of teaching as well as generation of products to demonstrate learning – effectively supports language development (Grapin, 2019; Holloway & Qaisi, 2022). "Multimodality is inherent to and essential for how students make meaning and engage in disciplinary practices. All students are able to both interpret and express ideas with greater flexibility when using multimodal resources, including multiple languages. Multimodality allows all students to use multiple means to engage, interpret, represent, act, and express their ideas in the classroom. For example, as students read, they also might refer to illustrations or diagrams, and as students write, they might also represent their ideas numerically or graphically" (WIDA, 2020, p. 19).

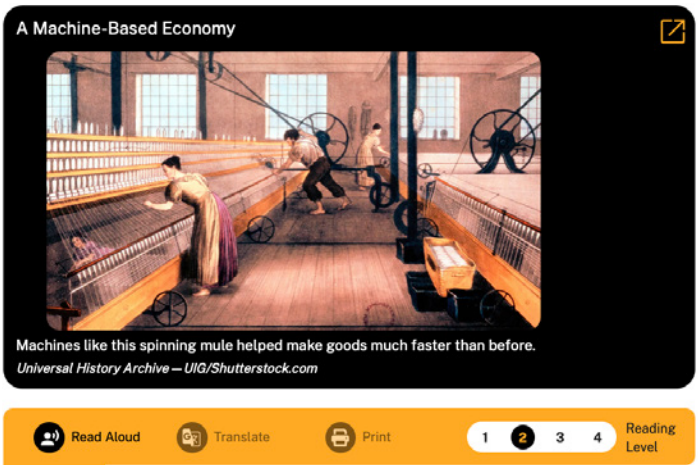
Digital learning has enormous potential to positively transform education for diverse groups of students when evidence-based practices are incorporated into instructional design (Chen, Bastedo, & Howard, 2018; Johnson et al., 2022; Means et al., 2010; Patrick & Powell, 2009; USDOE, 2016) – and it is both powerful and essential when it comes to multimedia and multimodal learning. Simulations of real-world situations and processes have been shown to improve learning gains across grade levels and subject areas (Dani & Koenig, 2008; Lindgren et al., 2016; Merchant, et al., 2012; Reinking, 2001) and boost self-efficacy and engagement (Taylor & Parsons, 2011; Chen, Lambert, & Guidry, 2010; Pellas, 2014).

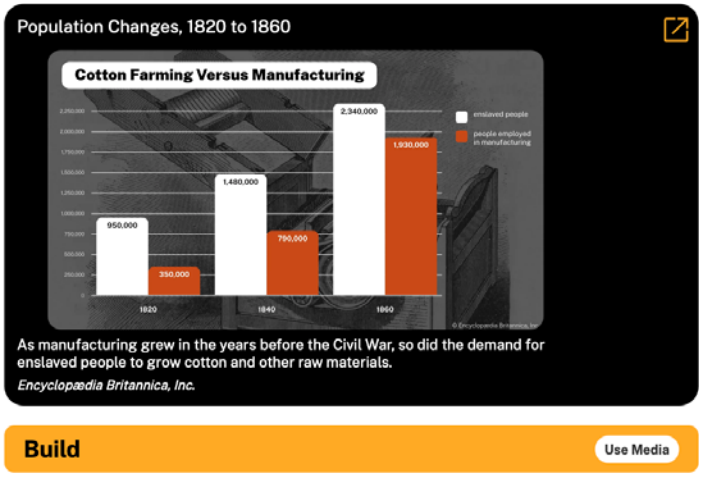
Embedded resources and references (such as vocabulary support) within digital instructional programs can increase focus and learning by reducing cognitive load and freeing up attention (Mayer, 2017). In addition to sparking interest and meeting diverse needs, multimedia e-learning is motivating due to the interactivity, responsiveness, and agency that digital environments allow (Abdoolatiff & Narod, 2009; Freeman et al., 2014; Schunk, Pintrich, & Meece, 2008; Zhang, 2005). Digital learning offers opportunities for students to engage with enhanced, dynamic content as well as more personalized learning in students' optimal modalities – while affording historically disadvantaged students greater access to high-quality education (Horn & Staker, 2011; Johnson et al., 2022; O'Byrne & Pytash, 2015; USDOE, 2016).

From RESEARCH to PRACTICE

Drawing from *Encyclopedia Britannica*'s wealth of multimedia resources and reference material, ***Expedition: Learn!*** lessons deliver dynamic instruction via visual, auditory, and text-based modes and extensive, highly engaging content. Along the lesson journey, students watch videos, read or listen to text, and interpret maps, tables, and graphic aids. They also interact with each segment through selected or composed responses. This multimodal approach to teaching content enhances the learning experience and maximizes outcomes for all students.







Sparking student interest and motivation with engaging, dynamic content

Decades of research has determined that motivation, engagement, and interest comprise a complex dynamic of affective, behavioral, and cognitive processes that, separately and combined, have significant impacts on learning (Ainley, 2012; Bandura, 1986; Eccles & Wigfield, 2002; Schunk, et al., 2008). Academic motivation is a key predictor of school success in K–12 education, and its widespread decline across demographics at the secondary level is well documented (Duckworth, et al., 2007; Farrington, et al., 2012; Jacobs et al., 2002; Jansen et al., 2022; Kuo et al., 2021; Lepper, Corpus, & Iyengar, 2005). Specifically in the area of literacy, numerous correlational, longitudinal, and experimental studies have linked motivation, engagement, and interest to reading achievement—which, due to the extent of text-based instruction students typically receive from grade 3 on, then has ripple effects on broader educational outcomes (Biancarosa & Snow, 2006; Guthrie, Klauda & Ho, 2013; Morgan & Fuchs, 2007; Schiefele et al., 2012; Toste et al., 2020; Wigfield & Guthrie, 1997). Compounding these issues, research suggests that the amount of engaged reading a student does has the single greatest influence on reading comprehension test scores (Allington & McGill-Franzen, 2021; Guthrie, 2008; Routman, 2003). It is then critical to increase the amount of engaged reading that students do.

Consequently, schools have compelling reason to implement instructional practices and interventions to cultivate and sustain motivational factors contributing to educational attainment and success, particularly within the area of literacy (Guthrie et al., 2013; Guthrie, McRae, & Klauda, 2007; Lazowski & Hulleman, 2016; NASEM, 2018). Jansen and colleagues (2022) provide the following recommendations derived from their research review on motivational variables:

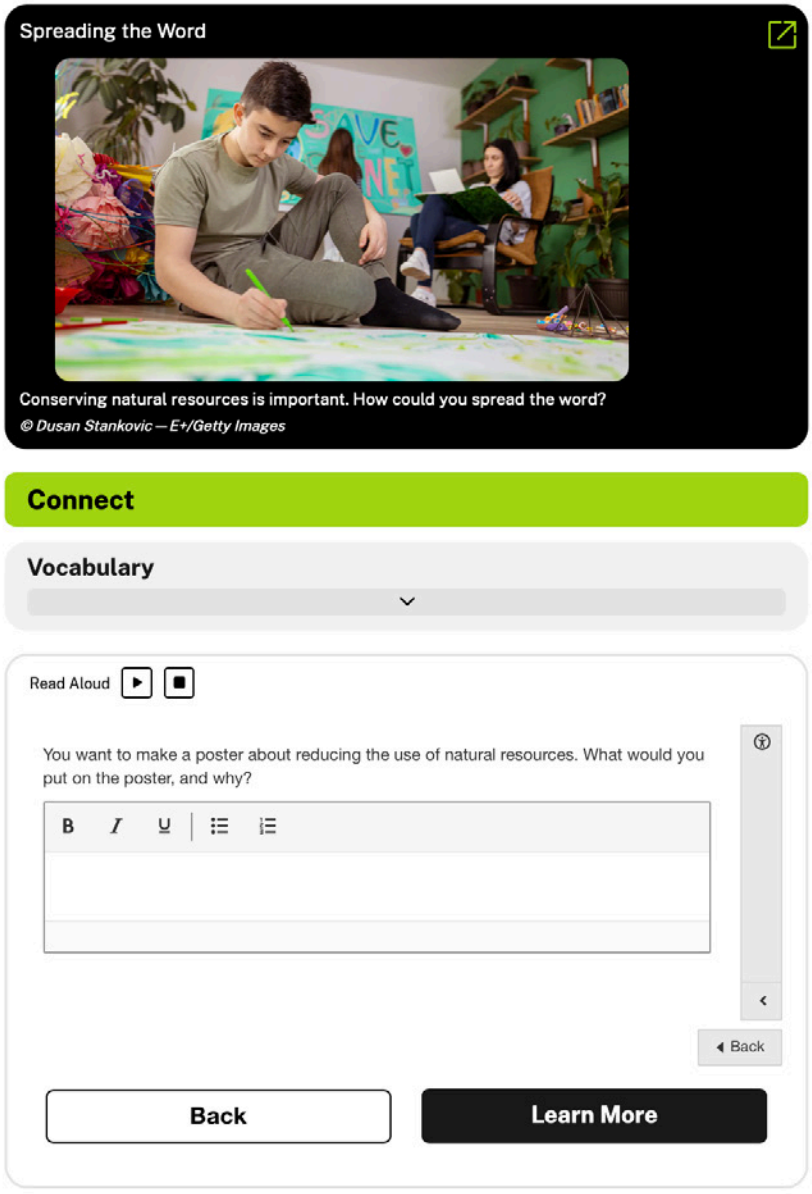
- Promote student autonomy.
- Offer tasks, activities, and assignments that are meaningful and interesting to students.
- Provide students with optimal levels of challenge.
- Encourage students to set goals for mastery and improvement rather than solely focus on performance indicators (i.e., grades and test scores).

Classrooms in which students enjoy and value learning are more likely to yield positive outcomes, including boosting motivation (Koenka, 2020; Strangman & Dalton, 2006). To motivate students, lesson designs should utilize resources that pique student interest and connect content area learning to students' backgrounds and life experiences; relevancy is critical (Bang et al., 2021; Taboada Barber & Klauda, 2020). Studies show high correlation between personal interest and informational text-based learning (Ainley, 2012; Guthrie & Klauda, 2012; Schiefele, 1999). Students interested in what they are reading are cognitively engaged (Hidi & Boscolo, 2006; Taylor, Graves, & Van den Broek, 2000), and interest and positive affects for reading are associated with higher recall and comprehension (Guthrie, Hoa, Wigfield, et al., 2007).

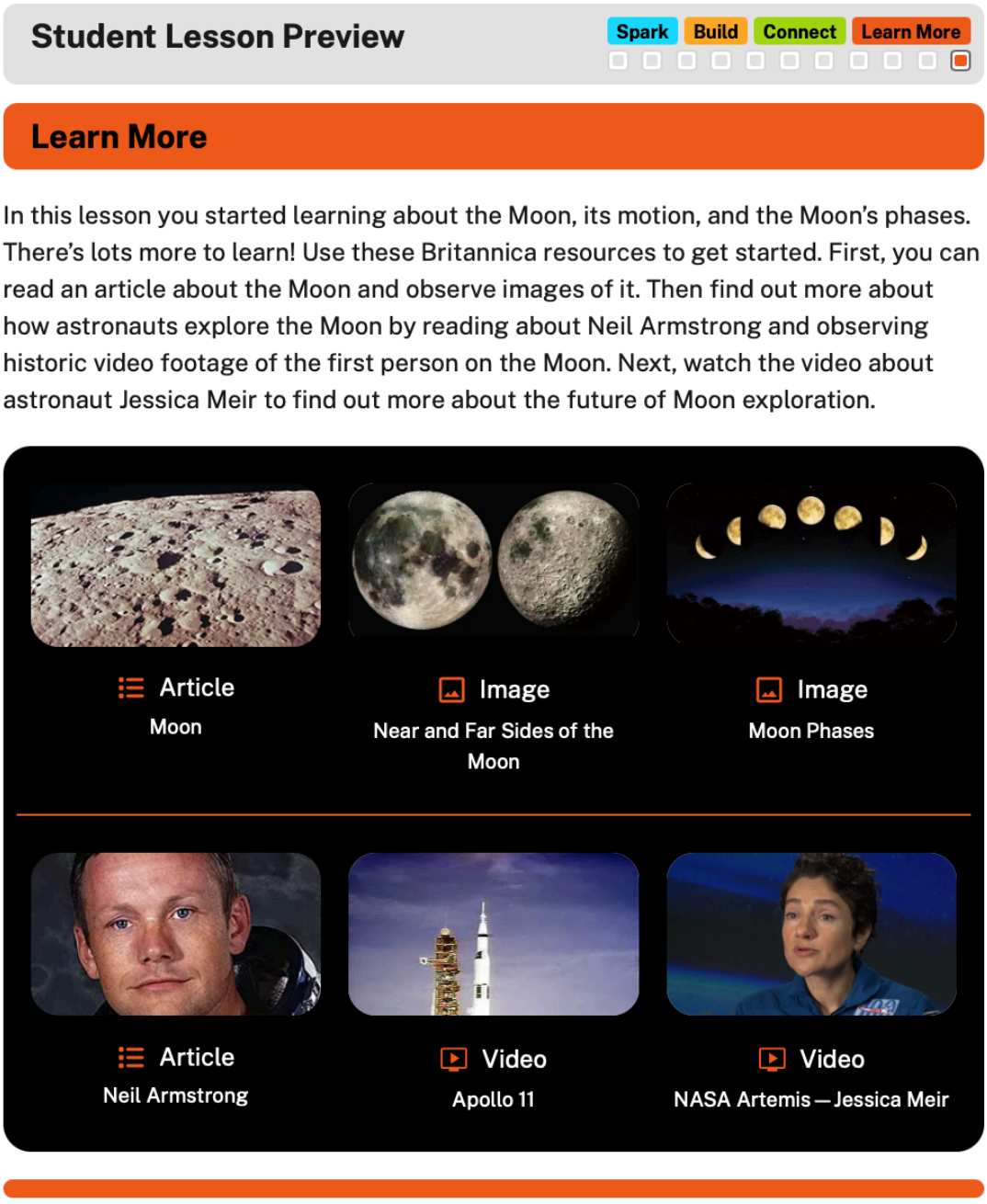
From RESEARCH to PRACTICE

Expedition: Learn! promotes student agency, autonomy, and self-efficacy. Lessons are predictably and effectively structured within a motivating framework featuring a Spark-Build-Connect-Learn More progression. In this sequence, interest is ignited, and content knowledge is developed; then, students connect learning to their own schema and experiences and are provided opportunities for further discovery.

Expedition: Learn! engages students in exploration of science and social studies topics that are not only standards-based, but also relevant to their own lives. Each lesson has students extend their thinking and connect to the content and issues presented on a personal level via student-centered creative and problem-solving activities.



Students also have embedded opportunities to continue learning about what interests them. At the end of each lesson, ***Expedition: Learn!*** offers links to *Encyclopedia Britannica*'s resources on related topics. These deeper dives provide enrichment, foster curiosity, and develop research skills – encouraging students to see themselves as capable, independent, lifelong learners.



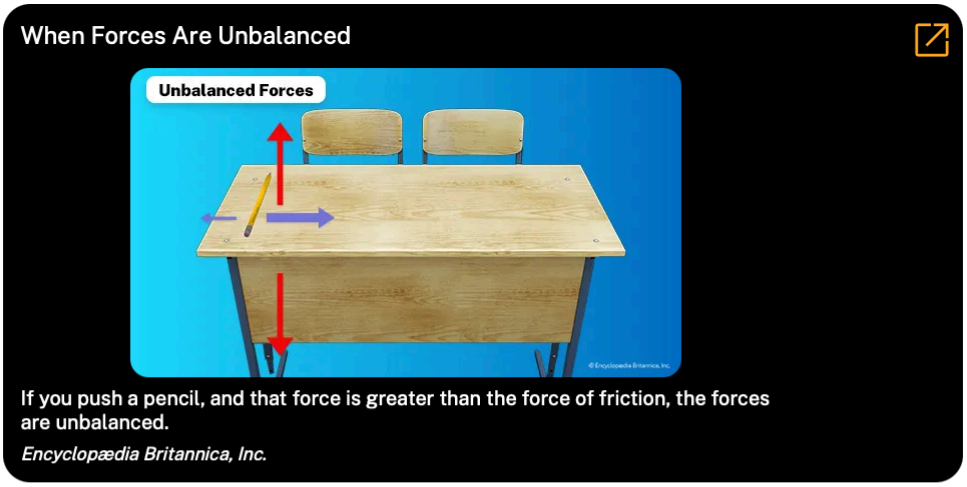
Embedding literacy development in the context of science and social studies learning

To productively and successfully progress through K–12 and college, launch careers, and engage in civic life, people need to read, understand, and respond to informational texts (Duke 2004; NGA & CCSSO, 2010, NASEM, 2018). At the middle grades, the amount of reading instruction students receive diminishes while, concurrently, the demands of text reading increase significantly in the well-known transition from learning to read to reading to learn; many students enter secondary schooling with limited reading skills and then struggle with the increasingly complex texts from which they must derive much of their discipline-specific education – making the stakes for content area literacy high (Fang, 2012; Kamil, Borman, Dole, et al. 2008; Lattimer, 2014; Lee & Spratley, 2010; Toste et al., 2019; Wanzek et al., 2011).

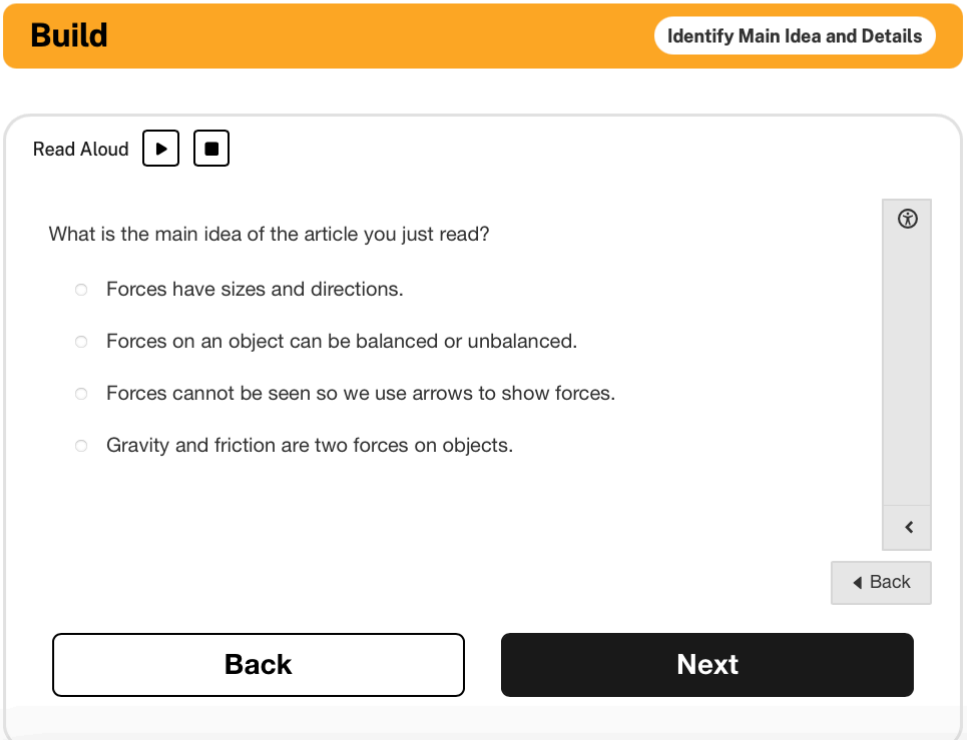
Content area literacy is the capacity to utilize reading, writing, and study skills to learn subject matter in a particular discipline. To construct meaning within a content area, students must enact higher-order thinking and literacy strategies, both general and discipline specific, and draw from their available schema, or background knowledge, including their discipline-specific vocabulary (Chauvin & Theodore, 2015; Fang, 2012; Harvey & Goudvis, 2007). Reading and content area learning share a recursive relationship: background knowledge in the subject of a text, or a lack thereof, can either facilitate or impede comprehension and information-getting, even when a text is at a suitable instructional level (Ankrum, 2022; Allington, 2002; Fisher & Frey, 2015). Research demonstrates that deepening students' content knowledge improves their text comprehension (Best, Floyd, & McNamara, 2008; Graves, Cooke, & LaBerge, 1983; McKeown, Beck, & Blake, 2009). Improving content area literacy is best achieved by embedding reading and writing skill development within the context of content area learning and presenting subject matter in ways that allow students to recognize the connections across disciplines; this integrative approach in turn infuses the learning experience with richness and relevance and supports life-long learning (Fang, 2012; Guthrie, 2008; Lee & Spratley, 2010; McGlynn & Kelly, 2018; NASEM, 2018).

From RESEARCH to PRACTICE

Expedition: Learn! integrates literacy development and content area instruction. Students learn and apply reading comprehension, listening, and writing strategies in the context of building knowledge in science and social studies. Targeted literacy skills employed within lessons are made explicit to promote students' metacognitive awareness and agency in their learning. This embedded approach is efficient and effective in terms of both teacher effort and student outcomes.



How can you find out if the forces acting on an object are balanced or unbalanced? The object's motion can help you find out. How do you think an object's motion gives clues about the forces acting on it? Later in the lesson, you'll find out!



Bridging language learning with translated texts and vocabulary support

Multilingual learners are the fastest-growing student population in the United States, comprising about 5.1 million learners and over 10% of overall enrollment in public schools as of 2019 (National Center for Education Statistics, 2022). "Multilingual learner" applies to *all* students who regularly interact with languages other than English, including but not limited to those commonly referred to as English learners (ELs). Multilingual learners represent a wide range of cultural, linguistic, educational, and socioeconomic backgrounds and have many physical, social, emotional, experiential, and/or cognitive differences. All bring to the classroom unique funds of knowledge and experiences that aid and advance their language development and education (WIDA, 2020). WIDA's 2020 *Standards Framework for K–12* supports the design of standards-based educational experiences that are student-centered, culturally and linguistically sustaining, and responsive to multilingual learners' strengths and needs. Among the overarching principles of the WIDA 2020 ELD Standards is the explicit integration of content and language, which is rooted in the recognition that multilingual learners develop academic content knowledge and language concurrently and connectedly, in the context of one another.

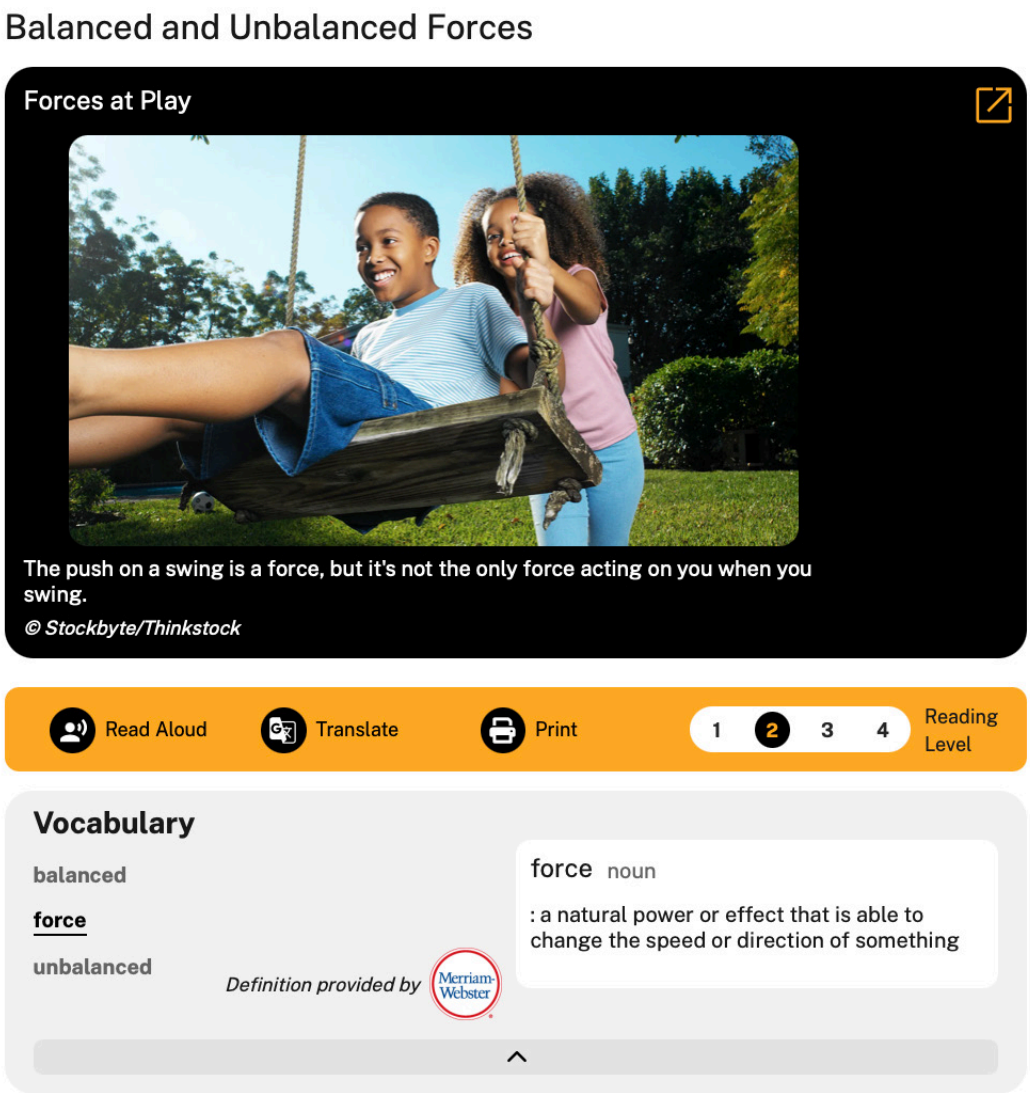
Rather than treat students' lack of English development as a deficiency to overcome, translanguaging theory and practices embrace an assets-based view and establish more fluid, flexible, equitable, and plurilingual environments. Translanguaging empowers multilingual learners by leveraging the unique linguistic and cultural resources each brings to the classroom and encouraging students to use their full repertoires of knowledge – language-based and beyond – in the meaning-making, communication, and content learning processes (Flores & Schissel, 2014; García, 2009; Li, 2022; Vallejo & Dooly, 2020; Wei, 2018;). Translanguaging also encompasses all the multimodal pathways through which language is recognized and constructed within a broader semiotic framework, including visuals, gestures, and relevant objects, as well as technology (García & Kleifgen, 2019; Vogel & García, 2017) and thereby affords more equitable learning opportunities, especially for adolescent ELs challenged by content area reading (Stewart, et al., 2021). By extension, making available to students during reading activities side-by-side translated text, which may be computer-generated translations, has an important place within translanguaging approaches to literacy development (NASEM, 2018; Seltzer, 2019). Research has shown that when multilingual students are encouraged to use the internet to access translations of the text under study, not only does their understanding of the original text improve, but students also become more aware of nuances across languages and how different languages express similar concepts or ideas in varying ways (García, Johnson, & Seltzer, 2017 and Pacheco & Miller, 2016 in García & Kleifgen, 2019). Further, studies examining the use of Machine Translation (MT) software (e.g., Google Translate) within instruction for multilingual learners have shown it to be supportive of language development in formal learning contexts as students actively incorporate MT within their semiotic repertoires (Beiler & Dewilde, 2020 and Vogel, Ascenzi-Moreno, & García, 2018 in Kelly & Hou, 2021). Drawing on their own findings, Kelly & Hou (2021) recommend the use of computer-generated translations within translanguaging pedagogy as a legitimate tool across stages of language development, particularly for students new to English, for whom MT fulfills "essential survival needs" that enable full participation in learning activities.

A body of research makes clear the importance of academic vocabulary and discipline-specific word learning for students to be successful in school and beyond. A student's level of proficiency with academic language can either bolster or hinder reading comprehension and text-based content area learning, particularly at grades 4–12 (Chavin & Theodore, 2015; Lee & Spratley, 2010; Marzano & Pickering, 2004; Nagy & Townsend, 2012). Explicit instruction that effectively develops academic vocabulary through approaches integrating literacy skill and content area learning is critical for struggling readers and for students learning English (Beck, McKeown, & Kucan, 2002, 2008; Calderón & Soto, 2016; Francis et al., 2006).

From RESEARCH to PRACTICE

Expedition: Learn! supports language development for all students, including multilingual learners. Students can simultaneously strengthen English literacy skills and build knowledge of science and social studies through scaffolding features that include read aloud options for all text and questions as well as side-by-side translations of a lesson's text into their home language.

Additionally, ***Expedition: Learn!*** expands students' discipline-specific academic vocabulary and aids their text comprehension via word meanings for key terms supplied from program partner *Merriam-Webster*.



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