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Beyond Pokémon: Augmented Reality Is a Universal Design for Learning Tool

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Abstract

The success of Pokémon Go is demonstrating that augmented reality (AR) is reaching the masses quickly and can be a robust tool to enhance student engagement and learning. Leveraging AR for instructional purposes has the potential to become a powerful medium for Universal Design for Learning (UDL) by providing new tools for multiple means of representation, action and expression, and engagement. One of the advantages of using AR applications and AR platforms is the ability to display context relevant digital information to support students' needs in real time and in specific contexts. Although many educational AR applications are in their developmental stages, the rapid growth of AR is likely to continue. The examples presented in this article focus on how educators can use mobile devices and AR to apply the principles of UDL. Combining AR with the principles of UDL can help educators create lessons that are accessible, engaging, and powerful for a diverse range of learners.

Keywords

augmented reality, universal design for learning, Pokémon, students with disabilities, technology

Mobile Technology

Pokémon Go recently became the most successful mobile app of all time, as demonstrated by the masses who are using augmented reality (AR) in their daily lives. The game is based on Satoshi Tajiri's childhood love for finding insects. In 1999, when he first developed Pokémon for Nintendo, Tajiri noted that kids increasingly play inside their homes due to urbanization and have forgotten about outdoor games like catching insects (Time, 1999). Now, with the proliferation of mobile devices, Pokémon Go uses your phone's GPS and clock to place Pokémon "characters" in your settings wherever you go. If you are in a park, more bugs and grass appear. If you are close to water, more Pokémons that are native to water will appear. If it is night, more ghosts will appear. Pokémon does not just come to the user; players have to go out into the real world to catch them. Pokémon Go's success demonstrates the power of AR, mobile devices, and creative minds.

While AR gaming is becoming popular among the masses, there is an incredible diversity of other AR apps providing new resources for teachers in general education and special education classrooms. AR is a new technology medium that is still very early in its development but is likely to become common educational technology as researchers and educators address the opportunities and challenges it creates (Wu, Lee, Chang, & Liang, 2013). Santos et al. (2016) note that using AR applications can provide good system usability overall and, specifically, can lead to better retention of new words in vocabulary. Other researchers have also noted the potential of AR in education (Bacca, Baldiris, Fabregat, Graf, & Kinshuk, 2014; Bai, Blackwell, & Coulouris, 2013; Santos et al., 2014). The potential of AR is only limited to the user's imagination, and is, therefore, one of the more innovative, exciting technologies that special educators can use in their classroom. Researchers and futurists agree that classrooms of the future will be filled with personal learning devices. In addition, bolstered by Cisco's (2013) report that the number of mobile devices now exceeds the number of people on earth, it seems as though this future is right around the corner. If educators can learn to embrace teaching with AR and mobile devices, and view them as powerful learning tools, we can create engaging lessons that increase accessibility for all learners, including those with special needs. However, two potential issues that may inhibit effective implementation of mobile technology in learning are (a) teachers' lack of training on how to use the technology and (b) the lack of a pedagogical

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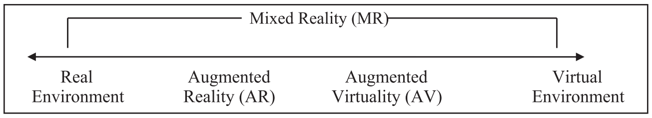

Figure 1. Milgram and Kishino's mixed reality continuum.

framework on how to include the technology to meet the needs of diverse learners. This article aims to address the challenges of implementation by examining practical AR apps available on common mobile devices and by connecting these apps to the well-established pedagogical framework of Universal Design for Learning (UDL).

Defining AR

Pokémon Go is a prime example of the power of AR. AR overlays digital information on top of the physical world to create an interactive space where users can explore, discover, interact, and learn (Craig, 2013). The term "augmented reality" was coined in 1992 to describe a platform used by Boeing as a manufacturing innovation which allowed workers to see digital prompts over real-time imagery to support the completion of assembly tasks (Caudell & Mizell, 1992). Twenty years later, AR is now a feature of many applications on a variety of devices including traditional computers, mobile phones, and, increasingly, wearable devices such as the Microsoft Hololens and Google Glass. AR platforms and applications display digital information on a live view of the real *physical* world, whereas virtual reality (VR) is a completely *artificial* digital environment as shown in the mixed reality continuum shown in Figure 1 (Milgram & Kishino, 1994). below.

AR and UDL on Mobile Devices

Developing a sound evidence base for new technologies requires a complex approach of theory, research, practice, policy, and innovation (Edyburn, 2013). Thus, the examination of available AR tools, like Pokémon Go, combined with the existing UDL framework can help us build a foundation for using AR in the classroom with students. UDL is now recommended for all learners since its inclusion in the Every Students Succeeds Act (ESSA; 2015). Mobile devices and apps, including AR applications, also possess capabilities that make them prime examples of UDL (McMahon & Walker, 2014). Mobile devices offer many benefits including the ability to create anywhere, anytime learning by transcending the traditional barriers between in-class and out-of-class experiences. One of the keys to Pokémon Go's success has been that it allows users to participate in activities outside their home. The same is true of using AR on mobile devices for learning as it allows our students to participate in learning activities that take place beyond the traditional brick and mortar classroom.

UDL Principles

Rather than thinking that new technologies such as AR will drastically change what educators teach their students, it is more productive to think of these technologies as new resources for UDL strategies and tools that support the work educators are already doing in the classroom. The National Center on UDL at the Center for Assistive and Special Technology (CAST; 2011) publishes the UDL guidelines that provide additional detail on the three broad principles of UDL. The first UDL principle of Multiple Means of Representation emphasizes the importance of flexible methods of displaying information to make the "what" or content of learning available to all learners. The second principle of UDL, Multiple Means of Action and Expression, is the "how" of learning and addresses the methods that can be used to provide learners with options to demonstrate their knowledge, organize their thinking, and interact with content. The third principle of UDL, Multiple Means of Engagement, presents flexible options for enticing, creating interest, persistence, and excitement about learning and is the "why" of learning. While the promise of UDL and the theory behind it are valuable, implementing UDL into practice can be facilitated by, even reliant upon, the use of technology. Many instructional technology tools allow educators to implement creative and powerful interventions for students with disabilities based on the existing UDL framework.

AR is uniquely positioned to support instruction within a UDL framework because the virtual objects that can be used in the AR system are flexible forms of media that can be leveraged to provide additional academic and social support to students with disabilities (CAST, 2011). The virtual objects, which can consist of text, still images, video clips, sounds, 3D models, and animations, allow teachers to personalize instruction based on an individual's needs (Bower, Howe, McCredie, Robinson, & Grover, 2014; Enyedy, DeLiema, & Danish, 2015). When viewed from a UDL perspective, AR can be infused throughout all three principles to remove barriers to learning. For example, the first principle of UDL states that content and skills are to be presented in multiple ways with scaffolded support as needed. Therefore, a teacher would remove barriers to learning by creating lessons with AR tools embedded. The AR tools would be used to enhance instruction by providing access to additional resources and learning material while also scaffolding supports throughout the lesson. Another example of using AR to present material in multiple ways is using virtual objects that have been rescaled. Using rescaled virtual objects provides students with opportunities to explore and gain a deeper understanding of the properties and relationships of objects that are inaccessible in daily life, such as molecules and planetary systems. To integrate AR into UDL Principle 2, Multiple Means of Action and Expression, teachers can move away from the typical paper and pencil assessments by providing students with the option of designing AR to demonstrate their knowledge. Research on design-based learning indicates that this process leads to the development of higher order thinking and improves student performance and motivation, as well as topic and domain-specific cognitive skills (Apedoe, Reynolds, Ellefson, & Schunn, 2008; Bower et al., 2014; Doppelt, Mehalik, Schunn, Silk, & Krysinski, 2008; Zahn, Pea, Hesse, & Rosen, 2010). Finally, in regard to UDL Principle 3, which calls for students to be actively engaged in authentic, relevant learning experiences, teachers can use AR to facilitate immersive games-based learning. Using immersive games-based learning involves creating a digital narrative, giving students roles to play, and embedding contextually relevant information and authentic resources. By using AR to facilitate immersive games-based learning, students engage with the concepts being studied and intimately involved in problem-based collaborative learning, both of which are facets of UDL Principle 3 (Bower et al., 2014).

AR Education Research

AR is a particularly powerful tool for individuals with disabilities due to the tools' capabilities of displaying context relevant digital information that can support the needs of the individual at that moment and provide just-in-time learning (McMahon, 2015). There is currently a small but promising evidence base for AR interventions for students with disabilities (Walker, Rosenblatt, & McMahon, 2015). Richard, Billaudeau, Richard, and Gaudin (2007) successfully used AR to teach matching skills to elementary students with intellectual disabilities (ID). AR has been used to provide students with disabilities with interactive science vocabulary words that display AR definitions and examples (McMahon, Cihak, Wright, & Bell, 2016). Several studies have examined AR navigation supports for transition aged students with ID and ASD (McMahon, Cihak, & Wright, 2015; McMahon, Smith, Cihak, Wright, & Gibbons, 2015; Smith, Cihak, Kim, McMahon, & Wright, 2016). Interventions using AR have also been used for functional skills including multistep supports for chained tasks (Cihak et al., 2016), vocational task prompting (Chang, Kang, & Huang, 2013), exercise/physical activity interventions (Lin & Chang, 2015), and emotion recognition supports for students with ASD (Chen, Lee, & Lin, 2015, 2016).

As special educators, we need to understand what innovative tools are available and how those tools can be applied to support the unique needs of our learners. For example, teachers can introduce words in context by labeling physical objects with text labels that AR apps can read. In addition, AR apps can read aloud difficult words, display additional information on an academic topic, provide video instructions and provide details about upcoming procedures when attempting a multistep activity, or deliver prompts to individuals to support independent living. AR can provide a myriad of solutions if we consider practical applications for AR in education in addition to more consumer-friendly entertainment value designs.

Practical Realizations of AR for Education on Mobile Devices

As mobile devices offer the most flexibility for AR because of their portability (Novak, Wang, & Callaghan, 2011), the 11 featured AR applications in this article are available on mobile devices. For each AR application, there is a brief description, connections to how it reinforces a UDL Guideline that can help support the needs of students followed by a brief example of how we can use it in class. Our UDL examples are by no means meant to be exhaustive or definitive and creative educators will be able to find ways to demonstrate all nine UDL principles for each app below. To help build awareness of these tools and their UDL connection for each app, we will identify at least one UDL Guideline (GL) or one specific UDL Checkpoint (CP) for each of the three broad UDL principles of multiple means of Representation, Action and Expression, and Engagement. Educators can find multiple uses for each AR application based on the needs of their students. Although some of the descriptions may seem abstract at this stage, the best way to learn these tools is to download each application and try them out as you read the descriptions. Using each application may be a more effective (and more fun) means of learning their capabilities than relying completely on the descriptions provided.

Anatomy 4D

Anatomy 4D (www.4danatomy.com/) uses a marker printed from the company's website so students can interact with the human body and different body systems. Using this app allows learners to engage with a human body by viewing the circulatory, skeletal, muscular, endocrine, and reproductive systems from different angles and depths. Anatomy 4D can be a very useful tool for teaching anatomy in science or health classes, teaching about injuries and injury prevention in health or physical education classes, or teaching introductory physiology classes. Users have to first print a PDF file marker from the website. Students view the printed marker with the app and an interactive 3D model of the body's systems appears. Students can view and zoom in on several systems at once or view a single system at a time. This provides the flexibility of interactive 3D models of the body rather than only static 2D human body diagrams in a book.

AR Basketball

AR Basketball (https://itunes.apple.com/us/app/arbasketball-augmented-reality-basketball-game/id393333529?mt=8) is a game in which participants use their mobile device to view a basketball goal in AR and shoot a digital basketball at the goal. The game keeps score and can be played individually or competitively. One way to integrate AR in the classroom is to practice math concepts like mean, median, and mode

Figure 2. Aurasma used to teach about making coffee.

based on student performance when practicing using the app. AR Basketball is a great example of how AR is part of the expanding field of educational gaming (McMahon, 2015).

AR Flashcards

AR Flashcards (http://arflashcards.com) provides early learning that can support letter identification, addition, shapes, colors, and planets. For example, students simply view the printed flashcard for the letter A with the app and an AR interactive 3D model of an Alligator appears. Students can then identify certain objects or characteristics. This is a great way to introduce basic skills with AR.

AR Freedom Stories

AR Freedom Stories (http://futurestories.ca/tubman/) is produced by the Harriet Tubman Museum. Each AR card provides a brief diorama with pictures and audio providing firsthand accounts of people involved in the underground railroad. Students with disabilities often display disorders in general cognitive/mental functioning and processing that include problems with conceptualization. AR Freedom Stories provides students with unique experiences that scaffold prior knowledge while also increasing motivation and allowing students to engage with educational content in unique ways that foster learning. The personal accounts can help students experience the primary sources of the Harriet Tubman Museum in an exciting and meaningful way.

Aurasma

Aurasma (www.aurasma.com/; see Figure 2) is a user-friendly AR app where users can create their own AR experiences to teach sight words, provide instructions for different learning stations, provide answers to problems, teach vocabulary, or explain cause and effect (Atherton, Javed, Webster, & Hemington-Gorse, 2013). Aurasma allows users to create interactive flashcards based on both words and images (McMahon et al., 2016). For example, users can write a common sight word like "DOG" on a piece of paper and create a unique pattern with a border and additional shapes. When the student uses the app to view the sight word, a corresponding picture of a dog appears. By using this app, teachers can create exciting, interactive AR flashcards for the words students need to learn.

Google Translate

The app *Google Translate* (https://itunes.apple.com/us/app/google-translate/id414706506?mt=8) includes a variety of methods to translate and express one language into another language including an AR feature using the device's camera. When a student uses the camera feature of Google Translate to view printed text, the app will translate text from one language into another in real time using AR. For example, if English to Spanish is selected when the student uses the Google Translate AR feature to view printed words in English, it replaces them with an overlay of the translated words in the selected language, so that the English text is translated into Spanish in AR. Google Translate uses AR to digitally replace the English word with a translation of that word in the target language. Google Translate's AR feature may be especially helpful for bilingual learners and any students learning a new language.

Places With Augmented Reality

Places With Augmented Reality (http://www.augmented-works.com/) is a user-friendly AR app that can help students navigate their community. Like many of the location-based AR tools, students have the ability to search for individual locations based on their needs/interests. Places With Augmented Reality can help students who may need additional support traveling within their communities and understanding distances between places. Using Places With Augmented Reality, we can now have students search for places (restaurants, entertainment, emergency services) that are within close proximity.

Pokémon Go

Pokémon Go (http://pokemongo.nianticlabs.com/en/) is a commercial success that can also have powerful effects in the classroom. Pokémon Go is designed to be used outside and promotes exercise by having participants move around to find insects. Exercise and movement are critical for our learners as research shows that high numbers of those with disabilities are obese or overweight. In addition to using Pokémon Go for student health, students with autism and other social disorders have used Pokémon Go and other similar games to practice social skills by working with each other. There are multiple uses of Pokémon Go for math or science as well. The ability to evolve your Pokèmon provides teachers with the opportunity to engage students in science by connecting a science vocabulary term, "evolve," to a preferred activity for some students. While evolution in Pokemon happens much faster than the multigenerational evolution in nature, it might be the one means of representation that helps increase the students' comprehension of this scientific concept.

String AR Showcase

String AR Showcase (http://www.poweredbystring.com/showcase) is an app with four different printable "markers": a sneaker, a dragon, Boffswana the monster, and Scrawl. The markers are highly interactive and can be great for young children working on early learning concepts such as letters and numbers while practicing basic literacy and numeracy skills. Students manipulate the creatures by having them move around or complete different tasks. The creatures are highly engaging and fun for kids to play with as they learn.

Vital Signs Camera by Philips

Vital Signs Camera (http://www.vitalsignscamera.com/) uses the front camera of the mobile device to measure heart rate and breathing rate. If a person can take a selfie, he or she has all the technical skills necessary to use this app. Users simply point the device at their face and the app will measure their heart rate and respiration. One obvious application for Vital Signs Camera would be to use it in health or physical education classes. You could also use it in a mathematics class to help understand mean, median, and mode, for example. However, this app can also be used as a learning tool to teach students with emotional-behavioral disorders about controlling their heart and breathing rates when they are starting to get frustrated.

Wikitude

Wikitude (http://www.wikitude.com/app/) displays location-based information in AR for around the user. Or, said another way, it can act as an Internet browser for information around you. For example, if you are at a historical site in your city that is in Wikipedia, information on that location will be displayed in AR for you. For example, in Pearl Harbor, you can use Wikitude to look at the large battleship in the harbor or the memorial and see in AR the battleship is the USS Missouri and the memorial is over the USS Arizona. Wikitude also includes the potential for educators to create their own location-based learning tools.

Conclusion

AR and VR are forecast to become a US$150 billion industry by the year 2020 (Digi-Capital, 2015). Applications that use AR will continue to become available on more devices that are affordable and available to our students. As demonstrated in this article (Table 1), there are multiple practical uses for AR applications on mobile devices (smartphones and tablets) for special education that already exist. Future integrations of AR in special education may also include wearable devices, such as smartwatches, smartglasses, and much more complex interventions and supports. Building a foundation of mobile learning experiences in special education now will help to shape a more inclusive future for everyone.

UDL is recognized as a critical design feature for the future of education and is now included in the ESSA (2015). The connections between these AR tools and the UDL guidelines briefly described in this article are by no means meant to be exhaustive or definitive. Creative educators will be able to expand on the examples provided here to use AR to support UDL. These AR tools can help educators provide instruction to learners with the flexibility and engagement described in the UDL guidelines. The potential of mobile technologies and AR to support the implementation of the UDL guidelines is only limited by the creativity and imaginations of educators who design lessons with these technology solutions to support the curriculum.

Therefore, there are many ways teachers can apply these new educational tools, along with their curriculum knowledge, to create innovative and engaging educational opportunities. The key to developing meaningful uses for these apps is to be creative and think outside of the box. Almost any app can have an educational use if we are imaginative and resourceful. We know that all students learn best with active participation. AR tools not only provide students with new ways to access information but also new ways to interact with the information as well. Like any tool or strategy we use with our learners, AR may not always be appropriate and, in some cases, may be inaccessible for certain populations. In addition, applications used on mobile devices are sensitive to the conditions around them such as light, temperature in some cases, and battery power. However, special education teachers who use AR can create learning experiences that are unique, interactive, tactile, and fun for individuals with a diverse range of abilities. To segue this generation of students into the workforce and to prepare them to become/remain lifelong learners, it is important that we embrace mobile technology and the AR apps that can help students with special needs as they learn new skills and grow within their school and local community. We believe that by combining our physical reality and the virtual world, we can create powerful experiences for all learners.

As educators, we have always been willing to think in non-traditional ways to help our students increase their academic performance, improve their social skills, become more independent, and prepare them for their post-school life. In many cases, technology has been an important component in this journey. From simple accommodations like read aloud

Table 1. AR Apps With Special Education Applications.

AR app	Focus	UDL principle: GL or CP	Example uses in special education
Anatomy 4D	Secondary science	Representation: (GL) Provides options for multiple means of sustaining effort and persistence Action and Expression: (GL) Options that facilitate managing information and resources Engagement: (CP) Options that increase individual choice and autonomy	Use Anatomy 4D for students who struggle with dyslexia or other language disorders. Viewing and manipulating the virtual body parts allows learners to learn about the systems of the human body in an interactive and individualized way. If they need more time to understand and manage their learning about a body system, they can use the controls on the app to select what information and details they need to examine.
AR Basketball	Elementary and secondary	Representation: (CP) Options that highlight critical features, big ideas, and relationships Action and Expression: (CP) Provide options for physical action Engagement: (CP) Options that enhance relevance, value, authenticity	One of many ways to make AR Basketball very educational is to use it as a "hook" to get students excited about a math lesson, "Ok class I want everyone to play AR basketball for 5 min and then write down your score. I will write all the scores on the board and we are going to use these numbers to learn about MEAN, MEDIAN, and MODE."
AR Flashcards	Pre-K Elementary	Representation: (CP) Options that define vocabulary and symbols Action and Expression: (CP) Options that enhance capacity for monitoring progress Engagement: (CP) Options that increase mastery-oriented feedback	AR Flashcards provide visual and auditory examples that are much more interactive than traditional flashcards. Students learning letter sounds, math facts, or matching skills can use these cards to improve basic skills. For teachers with large classes, this could be really helpful as instead of having to Say "Z is for Zebra" when the student views the "Z" card, the AR app will provide that auditory prompt and visual example.
AR Freedom Stories	Secondary social studies	Representation: (CP) Options that provide or activate background knowledge Action and Expression: (GL) Provide options for physical action Engagement: (CP) Options that foster collaboration and communication	The Harriet Tubman Museum's 20 AR cards detailing experiences on the Underground Railroad make a great way to explore this complicated topic. Rather than just reading these stories, students with disabilities can see photographs, slave ledgers, bills of sale, and listen to personal accounts. A great classroom activity for struggling writers is to place these 20 cards around the class and have the students compare and contrast the stories and events presented to them.
Aurasma	All ages	Representation: (GL) Provides options for multiple means of language, expressions, and symbols. Action and Expression: (CP) Options in the media for communication Engagement: (CP) Options that heighten salience of goals and objectives	Students working on independent living skills learn words about transportation and other life skills. Allow students to use the Aurasma app to view a bus stop. When the students point their device at the picture of a bus stop, Aurasma displays the pictures or video of the appropriate transportation information beside the sign. Aurasma can also provide video models to students about functional job/life skills such as how to use a copier or make a cup of coffee (see Figure 2), or project-based learning like creating interactive words walls.
Google Translate	Elementary and Secondary	Representation: (CP) Options that promote cross-linguistic understanding Action and Expression: (CP) Provide options for expressive skills and fluency Engagement: (GL) Provide options for sustaining effort and persistence	Students who are ELL or learning a new language can use Google Translate's AR translation feature to help them learn new words. Students can translate a difficult word in real time with this AR app. For example, a ELL student who also has a reading disability could use this app to translate an unknown word into their first language to help them better understand the material.
Places With Augmented Reality	Elementary and Secondary	Representation: Provide options for comprehension Action and Expression: (CP) Options for accessing tools and assistive technologies Engagement: (CP) Options that increase individual choice and autonomy	For example, in health class, this application could be beneficial when looking at food choices in different areas where students live. Students can search by category for local places (ATM's, hospitals, grocery stores, movie theaters, transportation) and then use the AR view to navigate to the actual building selected, not just a traditional dot on a map as in many GPS. AR navigation, like Places, is a promising tool to increase the independent navigation skills of students with intellectual and developmental disabilities.
Pokémon Go	All ages	Representation: Options that highlight critical features, big ideas, and relationships Action and Expression: (CP) Options that support planning and strategy development Engagement: (CP) Options that foster collaboration and communication	The AR Gaming App that changed the world can also be an amazing tool for special education teachers who have a creative spark. Fine motor, Gross motor, and Exercise Gaming (Exergaming) are obvious uses of this AR app but there are so many more ways to connect to student goals! How about decoding practice by pronouncing new and unusual Pokémon names? Math from simple counting to complex calculations is demonstrated throughout the game. Social goals for students with autism could include meeting new people with shared interests at your nearby Pokéstop.

(continued)

Table 1. (continued)

AR app	Focus	UDL principle: GL or CP	Example uses in special education
String AR Showcase	Elementary	Representation: (CP) Options that support memory and transfer Action and Expression: (GL) Provide options for expressive skills and fluency Engagement: (GL) Provide options for recruiting interest	ABA uses this is a great way to put a unique spin on discrete trial. Place physical objects (cup, ball, etc.) on written vocabulary words and have the students walk the cute 3-eyed alien to the correct word. After students understand the words, provide multiple objects, add more items, or switch their order and see how fast students can lead the aliens to the correct item.
Vital Signs Camera	Elementary and secondary	Representation: Options that customize the display of information Action and Expression: (CP) Options that guide effective goal-setting Engagement: (GL) Provides options for multiple means of self-regulation	Sample Lesson: Teach students to measure their own heart and breathing rates to control their emotions. For students with emotional and behavior disorders, teaching them to use Vital Signs during an emotional crisis can help them to understand their physical reactions. Teachers can prompt them to focus on breathing and relaxation techniques and measure their progress to control their outbursts.
Wikitude	Elementary and secondary	Representation: (GL) Provide options for perception Action and Expression: (CP) Options in the tools for composition and problem solving Engagement: (GL) Provide options for recruiting interest	Wikitude is an example of AR location-based learning. This app can display additional information about locations near the students. Educators can use this technology to help students with disabilities learn about locations in their communities in AR. Teachers can use this tool to recruit interest by connecting the curriculum with their students' physical community. Expect this type of AR to become very common.

Note. AR = augmented reality; GL = Guideline; CP = Checkpoints; UDL = universal design for learning; ATM = automated teller machine; ELL = English Language learners; GPS = Global Positioning Systems.

testing, to more innovative concepts like speech-to-text technology that allows a student to express their learning through verbal outputs instead of written ones, special educators are often at the forefront of technology adoption.

In his review of critical issues in the evidence base of special education technology, Edyburn (2013) set forth the following to the special education technology community: "As educators, we can passively wait until the future becomes the present, or we can work to actively influence the future" (p. 18). We hope fellow special educators hear Edyburn's comments as a rallying cry to educators across all disciplines to create the kinds of learning environments that we know would allow our students to thrive. Pokémon Go introduced the masses to AR. It is our hope that the commercial success of Pokémon Go will be a first step toward establishing AR's promise as medium for innovative technology interventions that will influence a brighter future that is inclusive of everyone.

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