UNIVERSAL DESIGN FOR LEARNING AND SCHOOL LIBRARIES

A Logical Partnership
School library programs have historically provided information literacy services to a range of students, including those with physical and cognitive disabilities (Hill 2012). School library multimedia production activities have facilitated opportunities for learners to be engaged and to express their knowledge in non-traditional modes. In my roles as an elementary, middle, and high school librarian, I recognized that many of the frequent student library patrons and student library assistants demonstrated strong technical aptitude. These same students were often not successful in traditional learning environments. It became evident that these students were able to express their knowledge in forms other than customary paper-and-pencil tasks. The most dedicated student library assistants were often not strong academic performers but were adept at wiring a computer lab, videotaping a school event, or editing video productions.

School library technology-integrated activities delivered a lens through which it was apparent to my instructional partners and myself that learning could be tailored to permit all learners to express their knowledge and abilities. Without the knowledge of a pedagogical framework for this phenomenon, we were experiencing the world of Universal Design for Learning (UDL) within the framework of the school library program. UDL and school libraries form a natural partnership. This article will explore the basic tenets of UDL in relation to collaborative curriculum development and implementation; provide a case study examination of UDL principles in action; and suggest school library curricular activities that provide opportunities for multiple means of representation, action, and expression.

**Universal Design for Learning**

Universal Design for Learning (UDL) began to evolve in the 1950s in Europe, Japan, and the United States with the emphasis on removing physical barriers in building construction. Kelly D. Roberts et al. (2011) noted that, in the 1960s and the 1970s, the UDL concept further evolved to integrating all people in architectural and environmental designs. The Higher Education Opportunity Act (2008) defined UDL as a scientifically valid framework for guiding educational practice that:

(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and

(B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.

The Center for Applied Special Technology (CAST) defines UDL as a “framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn” (2017). According to the National Center on Universal Design for Learning, “UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs” (2014). UDL supports the needs of diverse learners, including learning-disabled students from diverse cultural backgrounds (King-Sears 2009).

**Universal Design for Learning and Neuroscience**

The foundations of UDL are based around guiding principles for three
primary brain networks (Meyer, Rose, and Gordon 2014). These brain networks are the Recognition Networks, Strategic Networks, and Affective Networks. The Recognition Networks encompass the “what” of teaching and learning: “how we gather facts and categorize what we see, hear, and read, identify letters, words, or an author’s style are recognition tasks” (CAST 2017). Different students process and comprehend information differently. The Recognition Networks are best supported in learning environments that include multiple representations of concepts and provide flexibility in modality, explanations, and examples (CAST 2017). Optimally, school library programs are the center of this Recognition Networks’ flexibility in Pre-K–12 schools.

The “how” of learning occurs within the Strategic Networks. Action and expression are the guiding principles of the Strategic Networks. Planning and performance tasks, the organization of ideas, and the ways in which students demonstrate knowledge are examples of the Strategic Networks’ “how” of learning (CAST 2017). This student demonstration of knowledge is best supported in environments that include multiple ways for presenting and expressing materials, for developing meta-skills, and for demonstrating knowledge and understanding (CAST 2017).

The “why” of learning occurs within the Affective Networks. Supporting the Affective Networks is facilitated by the guiding principles of motivation, challenging students to provide examples of the “why” of learning, and providing students with options for how they learn course content and information (CAST 2017). Students’ natural learning differences affect engagement with course content. Providing options via meaningful interactions and multiple modes of learning supports learning via the Affective Networks (CAST 2017).

The National Center on Universal Design for Learning (NCUDL) (2011) provided UDL guidelines that are organized according to the three main principles of UDL (Representation, Action and Expression, and Engagement). The three main principles are:

- Principle I. Provide Multiple Means of Representation
- Principle II. Provide Multiple Means of Action and Expression
- Principle III. Provide Multiple Means of Engagement (NCUDL 2013)

The three main principles and supporting guidelines are illustrated via an excellent graphic at <www.udlcenter.org/aboutudl/udlguidelines/udl-guidelines_graphicorganizer>.

**UDL and School Libraries**

A consistent expectation of school librarians is the effective delivery of instruction to students with a range of learning needs. Ying Zhong, in a study of academic library instruction, noted that, in the design of library instruction, the simple adoption of UDL facilitates students’ mastering of skills (2012). Clark Nall noted that the principles of (UDL), when incorporated in academic libraries, provide learning opportunities for a wide array of students, especially for students with learning disabilities (2015). Elfreda V. Blue and Darra Pace in “UD and UDL: Paving the Way toward Inclusion and Independence in the School Library” stated that UDL “can greatly enhance the library experiences of diverse students, leading to inclusion and independence for students with disabilities” (2011, p. 54).

In *Empowering Learners: Guidelines for School Library Programs* AASL described the teacher role of the school librarian as one that “empowers students to become critical thinkers, enthusiastic readers, skillful researchers and ethical users of information” (2009, p. 18). The role of “instructional partner” was identified by AASL, via a survey of select school librarians and administrators in 2009, as the most critical role in the future of the profession (2009, p. 16). In *Empowering Learners* the school librarian’s interconnected teaching roles of instructional partner and teacher are evident when the instructional partner is described as one who “collaborates with classroom teachers” (AASL 2009, p. 17) and “understands the curriculum of the school thoroughly and can partner with teachers to create exciting learning experiences in an information- and media-rich environment” (AASL 2009, p. 19). These key roles of the school librarian, particularly the roles of instructional partner and information specialist, serve as a framework for modeling and infusing UDL principles and strategies throughout the entire school curriculum. The following case study illustrates how collaborative school library curriculum planning and coteaching can support students’ accessing the UDL Recognition Networks, Strategies Networks, and Affective Networks to provide for optimal learning. The three main UDL principles (Representation, Action and Expression, and Engagement) are included in table 1 to denote their application in the following scenario.

**Case Study and Connections to UDL**

The focus of this case study is a group of five middle school students who collaborated on a research and multimedia project on the United States Civil War. The students were
<table>
<thead>
<tr>
<th>Process</th>
<th>UDL Principles</th>
<th>UDL Indicators</th>
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<tbody>
<tr>
<td>The students took notes with varying levels of assistance based on their respective accommodations, including the use of assistive technologies.</td>
<td><strong>Representation</strong> by providing options for language and options for comprehension.</td>
<td>2.1–2.3, 3.2–3.4, 7.3, and 9.2</td>
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<td><strong>Action and Expression</strong> by optimizing access to tools and assistive technologies.</td>
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<td><strong>Engagement</strong> by minimizing threats and distraction, and facilitating personal coping skills and strategies.</td>
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<td>Students could choose from print materials, online resources, and audio and video resources from which to take notes.</td>
<td><strong>Representation</strong> by providing options for perception and comprehension.</td>
<td>2.1-2.3, 2.5, 4.1, 5.2, 7.1–7.2, and 8.2</td>
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<td><strong>Action and Expression</strong> by varying the methods for navigation and using multiple tools for construction.</td>
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<td><strong>Engagement</strong> by optimizing individual choice, and varying demands and resources.</td>
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<td>The classroom teacher provided significant assistance to the students in writing script.</td>
<td><strong>Representation</strong> by providing options for language and comprehension.</td>
<td>2.1–2.2, 3.1–3.3, and 7.3</td>
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<td><strong>Action and Expression</strong> by providing options for expression and communication, and providing options for executive functions.</td>
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<td><strong>Engagement</strong> by minimizing threats.</td>
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<td>A storyboard was developed, and the students were asked to find images to align with the text.</td>
<td><strong>Representation</strong> by illustration through multimedia and highlighting patterns, critical feature, big ideas, and relationships.</td>
<td>2.5, 3.2, 6.2–6.3 and 8.2–8.3</td>
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<td><strong>Action and Expression</strong> by providing options for expression and communication, and providing options for executive functions.</td>
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<td><strong>Engagement</strong> by varying demands and resources, and fostering collaboration and community.</td>
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<td>The soundtrack was recorded. Using a video copy stand, small groups of students recorded the video images, and incorporated some in-camera effects.</td>
<td><strong>Representation</strong> by guiding information processing, visualization and manipulation, and maximizing transfer and generalization.</td>
<td>2.5 3.4, 4.2, 5.1, 5.2, and 8.3</td>
</tr>
<tr>
<td></td>
<td><strong>Action and Expression</strong> by providing multiple media for communication, multiple tools for construction, and optimizing access to tools and assistive technologies.</td>
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<td><strong>Engagement</strong> by fostering collaboration and community.</td>
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once the note-taking process was
the students in writing a script. With
of making the video and their
knowledge acquired in the process.

We sensed the students learned more
in this constructivist process than
they would have by more traditional
means. The most vivid example of
this qualitative supposition was dem-
onstrated by the narrator. As she was
narrating a scene on the assassination
of President Lincoln, she suddenly
went off script and said, “Oh my
god, they killed the man.” This was a
landmark moment for the classroom
teacher and myself. We had been
discussing the Lincoln assassina-
tion through the entire process, but
it wasn’t until the narrator read
the script in conjunction with the
images, that she correlated the
assassination with the death of
President Lincoln (consistent with
multiple means of Representa-
tion, Action and Expression, and
Engagement). In addition to the
knowledge acquired on the United
States Civil War, the students were
provided with opportunities to
engage with a variety of technologies.
The students expressed motivation
and satisfaction with the process.

**Conclusion**

The pairing of research
and multimedia production has a rich
history in school libraries (Lamb
2015). This case study illustrates
how the principles of UDL are
naturally rooted in school library
curriculum and activities. School
librarians may use information
presented in table 1 as a template
for other research and multimedia
collaborative activities. As school
librarians embark on instructional
partnerships with co-educators,
the following are some additional
UDL–compliant curricular activities
that provide for multiple means
of Representation, Action and
Expression, and Engagement.

At the elementary level, digital
storytelling provides a vehicle to

**Table 1** outlines each phase
of the research and production
process, and the corollary UDL
principles and indicators. The
full list of checkpoints (indicators)
associated with UDL can be
viewed at <www.udlcenter.org/
research/researchevidence>.

The entire research and production
process took about three months.
Some entire class sessions were
dedicated to the process, particu-
larly the note taking. Much of
the production work was accomplished
by working with the students indi-
vidually or in teams. To celebrate
these students’ efforts, we arranged
for a premier showing of the video
and invited teachers, administra-
tors, and central office supervisors
to attend. The students shared
with the audience the process

at the highest levels of assistance. Based
on their respective accommodations,
the use of assistive technologies was
provided in this process. The students could
choose from print materials, online
resources, and audio and video
resources from which to take notes.

Once the note-taking process was
completed, the classroom teacher
provided significant assistance to

at the elementary level, digital
storytelling provides a vehicle to

special needs students, and only
one student was reading on grade
level. However, this group had a
wide array of talents and abilities.
Several students had served as library

 helpers and had previously displayed
technical proficiencies. Their social
studies teacher/special educator was
a frequent library visitor and col-
laborator, and shared an interest in
tapping into these students’ unique
talents and abilities. The teacher
and I (school librarian at the time)
agreed that preparing a traditional
research paper was not going to be an
effective mode of learning for these
students. The classroom teacher and
I discussed accommodations/modi-
fications to the research process and
having the students express their
knowledge in a mode compatible
with their talents and abilities (i.e.,
providing a range of opportuni-
ties for Representation, Action
and Expression, and Engagement).

We decided to ask the students to
produce a video documentary in the
spirit of Ken Burns’s The Civil War.
The process began by assigning each
student a specific Civil War topic.
The students took notes with varying
levels of assistance. Based on their
respective accommodations, the use
of assistive technologies was provided
in this process. The students could
choose from print materials, online
resources, and audio and video
resources from which to take notes.

Once the note-taking process was
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**STUDENTS AT ALL LEVELS CAN PRODUCE**

**A VARIETY OF RESEARCH-BASED PRODUCTS**

**THAT CAN SERVE AS ALTERNATIVES TO**

**TRADITIONAL RESEARCH PAPERS.**

The next step was to record the
narration and soundtrack. The
oldest of the five students, who
was the best reader, narrated the
script. Using a video copy stand,
small groups of students recorded
the images from print and online
sources, and incorporated some
in-camera effects. Editing the final
video was completed by my working
with rotating pairs of students.
collaborate with teachers in multiple content areas (language arts, social studies, art, and music). One variation is to have students create their own folk tale, either individually or as a class. Each student can illustrate a scene from the folk tale. The image can be scanned and incorporated into a digital movie or other type of presentation generated with software. Students can then record the audio narration for their respective illustrations and add a music soundtrack. Music and art teachers may prove willing partners on such endeavors.

Secondary students can create music videos to support research in the areas of language arts, social studies, art, and music. Ideally, students create their own compositions, but non-copyrighted music is an alternative. Teams of students develop a story based on their own research, produce a script, and create a video to accompany the soundtrack.

Students at all levels can produce a variety of research-based products that can serve as alternatives to traditional research papers. Wikis and websites provide modes of collaborative production. AASL’s annual list of “Best Websites for Teaching and Learning” provides a list of websites compatible with the UDL framework. Among the categories of resources on the “Best Websites for Teaching and Learning” list (2016 and previous years) are media sharing, digital storytelling, and curriculum collaboration.

School librarians must meet the needs of all learners. UDL provides the ideal framework for collaborative curriculum planning and implementation to meet these needs.

Works Cited:


