Secondary Special Education Teachers' Digital Literacy: Identifying Professional Development Needs Within a Curriculum

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Abstract: After the development of a curriculum designed for secondary students with exceptionalities on 21st-century digital literacy skills, the development team discovered a critical need to increase secondary special education teachers comfort levels with their own digital literacy skills and their ability to incorporate technology in their instructional practices. A survey was developed and administered across the state to secondary special education teachers to discover their comfort levels with their digital literacy skills, the need for digital literacy skills with their students and how to best facilitate the development of these skills within their instructional practices. The results of this study will be used to develop a professional development program to work in tandem with the College and Career Prep Digital Literacies Training curriculum to best assist instructors and their students when pursuing post-secondary outcomes.

Introduction

A goal of secondary education and special education transition services is to prepare students for life beyond high school (Johnson, Stodden, Emanuel, Luecking, Mack, 2002; Littky & Grabelle, 2004). However, life beyond high school has changed a great deal during the last few decades, and transition services need to change appropriately. For some time now, educators have argued that students need to acquire certain "skills" to succeed in the 21st century (Dede, 2010). One of these many skills is the importance of acquiring digital literacy skills in the 21st century (Dede, 2010). Fraser (2012) explains that digital literacy includes a robust knowledge of the affordances and limitations of digital tools and strategies to address goals and needs in a variety of settings and contexts, plus the skill-set and disposition necessary for critical thinking, social engagement, and innovation (Fraser, 2012). Digital literacy, however , is much more than knowing how to use a computer or send a text message. Ng (2012) argues that a digitally literate person is someone who is able to "adapt to new and emerging technologies quickly and pick up easily new semiotic language for communication as they arise" by embracing "technical, cognitive and social-emotional perspectives of learning with digital technologies, both online and offline" (p. 1066). High school and college graduates today are expected to be digitally literate as they enter the workforce (Jones & Flannigan, 2006; Weiner, 2011). As such, educators need to help develop students' digital literacy throughout their formal education (Van Ouytsel, J., Walrave, M., & Ponnet, K., 2014).

Students with disabilities, though, are often overlooked when it comes to digital literacy. This is problematic in part because students need basic digital literacies to apply to college or even most jobs today. While most students today have some experience with using the Internet, social media (e.g., Youtube), and social networking sites (e.g., Facebook) for fun, many lack the digital literacy skills needed to succeed in college and/or today's workplace (Schimel, 2015; Veiga & Herald, 2015). Given this problem, we set forth to develop develop curriculum targeted at teaching high school students with disabilities the digital literacy skills needed to transition to college or the workforce. Part of the process of implementing this new curriculum is training teachers on the curriculum. However, in order to develop and deliver the most efficient digital literacy training for special

education teachers, we needed to first investigate their own digital literacy skills. Therefore, the purpose of this study was to investigate the digital literacy skills of special education teachers in a pacific northwest state.

Method

This study was guided by the following five research questions:

1. How digitally literate are special educators?
2. How digitally literate are special education students?
3. How do special education teachers integrate technology into their classroom?
4. How do special education teachers teach their students digital job seeking skills and how effectively have students acquired digital job seeking skills?
5. What are the best ways (content and format) to support the development of special educators digital literacy skills?

To answer these questions, we developed a survey with 30 questions. The survey was constructed to answer each research question. Part of the survey was aligned with the European Digital Competence Framework for Citizens. The survey was administered to special education teachers at four districts. A total of 103 special education teachers completed the survey, 60 of which self-identified as secondary teachers. We are only presenting the data from the secondary teachers in this paper. The participants teaching experience ranged, with an average of 6.79 years of teaching experience.

Results

We will briefly report some of the main the results based on the research questions guiding the study in the following sections.

RQ1: How digitally literate are special educators?

We asked a range of questions to determine how digitally literate special educators are in our western state. When asked to specifically assess their own digital literacy skills, the secondary special educators on average rated themselves at a 3.83 on a five point scale (see Table 2), with 65% of rating themselves as having good or excellent skills. We then used the European Digital Competence Framework to assess teachers information processing, communication, content creation, and problem solving skills (See Table 1). Out of these four types of skills, teachers self-assessed problem-solving skills the highest (M=2.28), followed then by information processing skills (M=2.22), communication skills (M=2.15), and content creations (M=1.75) as the lowest.

Table 1. Digital Competence Results

Information Processing Skills			
Basic **22 (12.2%)**	**Independent** **96 (53.3%)**	**Proficient** **62 (34.4%)**	**Total:180** *M*=2.22
I can look for information online using a search engine. **3 (5.0%)**	I can use different search engines to find information. I use some filters when searching (e.g. searching only images, videos, maps). **44 (73.3%)**	I can use advanced search strategies (e.g. using search operators) to find reliable information on the internet. I can use web feeds (like RSS) to be updated with content I am interested in. **13 (21.7%)**	**Total: 60** *M*=2.17
I know not all online information is reliable. **5 (8.3%)**	I compare different sources to assess the reliability of the information I find. **35 (58.3%)**	I can assess the validity and credibility of information using a range of criteria. I am aware of new advances in information search, storage and retrieval. **20 (33.3%)**	**Total: 60** *M*=2.25
I can save or store files or content (e.g. text, pictures, music, videos, web pages) and retrieve them once saved or stored. **14 (23.3%)**	I classify the information in a methodical way using files and folders to locate these easier. I do backups of information or files I have stored. **17 (28.3%**	I can save information found on the internet in different formats. I can use cloud information storage services. **29 (48.3%)**	**Total: 60** *M*=2.25

Communication Skills			
Basic **49 (27.2%%)**	**Independent** **55 (30.6%)**	**Proficient** **76 (42.2%)**	**Total:** **180** *M*=2.15
a. I can communicate with others using mobile phone, Voice over IP (e.g. Skype) e-mail or chat – using basic features (e.g. voice messaging, SMS, send and receive e-mails, text exchange). **23 (38.3%)**	I can use advanced features of several communication tools. **10 (16.7%)**	I actively use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs, social networks) for online communication. **27 (45%)**	**Total: 60** *M*=2.07
I can share files and content using simple tools (e.g., emailing a colleague a word file) **10 (16.7%)**	I can use collaboration tools and contribute to shared documents/files someone else has created (e.g., a Google Doc) **17 (28.3%)**	I can create and manage content with collaboration tools (e.g. electronic calendars, project management systems, online proofing, online spreadsheets). **33 (55%)**	**Total: 60** *M*=2.38
a. I am aware of social networking sites and online collaboration tools. **16 (26.7%)**	b. I pass on or share knowledge with others online (e.g. through social networking tools or in online communities). **28 (46.7%)**	c. I can regularly use social networking sites and online collaboration tools to communicate and collaborate with others, some of which I have never met face-to-face. **16 (26.7%)**	**Total: 60** *M*=2.00
Content Creation Skills			
Basic **68 (37.9%)**	**Independent** **88 (49.2%)**	**Proficient** **23 (12.8%)**	**Total:** **179** *M*=1.75
I can produce simple digital content (e.g. text, tables, images, audio files) in at least one format using digital tools. **35 (58.3%)**	I can produce complex digital content in different formats (e.g. text, tables, images, audio files). I can use tools/editors for creating web page or blog using templates (e.g. WordPress). **20 (33.3%)**	I can produce or modify complex, multimedia content in different formats, using a variety of digital platforms, tools and environments. I can create a website using a programming language. **5 (8.3%)**	**Total: 60** *M*=1.50
I can make basic editing to content produced by others. **12 (20.3%)**	I can apply basic formatting (e.g. insert footnotes, charts, tables) to the content I or others have produced. **35 (59.3%)**	I can use advanced formatting functions of different tools (e.g. mail merge, merging documents of different formats, using advanced formulas, macros). **12 (20.3%)**	**Total: 59** *M*=2.00
I know that content can be covered by copyright. **21 (35%)**	I know how to reference and reuse content covered by copyright. **33 (55%)**	I know how to apply licenses and copyrights. **6 (10%)**	**Total: 60** *M*=1.75
Problem Solving Skills			
Basic **89 (49.4%)**	**Independent** **71 (39.4%)**	**Proficient** **20 (11.1%)**	**Total:** **180** *M*=2.28
I can find support and assistance when a technical problem occurs or when using a new device, program or application. **25 (41.7%)**	I can solve most of the more frequent problems that arise when using digital technologies. **27 (45%)**	I can solve almost all problems that arise when using digital technology. **8 (13.3%)**	**Total: 60** *M*=1.72
I know how to solve some routine problems (e.g. close program, re-start computer, re-install/update program, check internet connection). **35 (58.3%)**	I can use digital technologies to solve (non-technical) problems. I can select a digital tool that suits my needs and assess its effectiveness.**18 (30%)**	I can choose the right tool, device, application, software or service to solve (non-technical) problems. **7 (11.7%)**	**Total: 60** *M*=2.53
I am aware that I need to update my digital skills regularly. **29 (48.3%)**	I regularly update my digital skills. I am aware of my limits and try to fill my gaps. **26 (43.3%)**	I frequently update my digital skills. **5 (8.3%)**	**Total: 60** *M*=2.60

RQ2: How digitally literate are special education students?

When asked to rate how digitally literate their students were, the secondary special educators rated their students digitally literacy skills on average a 2.90 on a 5.0 scale, with them rating 70% of their students as having poor to average digital literacy skills. They went on to further assess their students skills at accomplishing some specific tasks. They identified their students use of social media as the strongest (see Table 2). For instance, when asked how effectively can their students use social media responsibly, they rated their students on average 2.38 on a 5.0 scale; when asked how effectively their students can search and apply for jobs online, they rated them 2.17 on a 5.0 scale; and finally, when asked how effectively their students can communicate professionally online, they rated them 2.11 on a 5.0 scale.

We later asked them what digital literacy skills they think most students need The secondary special educators pointed out students need to accomplish basic tasks such as logging into a computer, emailing, and word processing to more advanced skills such as the ability to communicate effectively online and digital citizenship and being safe online.

RQ3: How do special education teachers integrate technology into their classroom?

We were specifically interested in how special educators assessed their ability to integrate technology into their classroom. When asked how effectively they integrate technology, the secondary special educators generally reported that they think that they do a good job, rating themselves on average as 3.12 on a 5.0 scale, with 28.7% reporting that they do this effectively and 58.3% reporting that they do this moderately effectively. We then asked how they would rate their ability to incorporate technology into their instruction by asking them how effectively they address the following specific ISTE standards for teachers (on a 5.0 scale ranging from very ineffectively to very effectively):

- To facilitate and inspire learning and creativity: $M=3.05$
- Designing and develop digital age learning experiences and assessments: $M=2.88$
- To model digital age work and learning: $M=3.16$
- To promote and model digital citizenship and responsibility: $M=3.34$
- To engage in professional growth and leadership: $M=3.29$

See Table 2 for more details.

RQ4: How do special education teachers teach their students digital job seeking skills and how effectively have students acquired digital job seeking skills?

We were then interested in learning how well secondary special educators taught digital job seeking skills and or how well they believed their students had acquired such skills. When asked how well do you prepare your students to use the Internet to search for a job, the secondary special educators on average reported 2.47 on a 5.0 scale with 42.1% reporting that they do this moderately effective. Then when asked how effectively can your students search and apply for jobs online, they reported on average 2.17 on a 5.0 scale, with over 61% reporting that their students are very effective or ineffective at doing this.

RQ5: What are the best ways (content and format) to support the development of special educators digital literacy skills?

Finally, we were interested in learning what the best ways to support the development of special educators digital literacy skills. For instance, we asked the secondary special educators the following:

- What types of support would help further develop your digital literacy skills and integrate technology effectively into your classroom?
- What digital literacy skills do most teachers need?
- What digital literacy skills do most students need?

While a complete reporting of these results is beyond the page limit of this proceedings, the secondary special educators identified things such as more equipment (e.g., laptops, tablets), additional training on equipment, targeted professional development on how to integrate technology specifically into special education classrooms with diverse students with diverse needs, and finally more time to engage in aforementioned professional development. Then when specifically asked about what types of digital literacy skills needed, the answers ranged from the basics of Microsoft Office or Google Apps to more advanced things such as content creation.

Table 2. Perceptions of Digital Literacy and Integration Skills

	1	2	3	4	5	*M*
How would you rate your digital literacy skills? [1]	0 (0%)	2 (3.3%)	19 (32%)	26 (43.3%)	13 (21.7%)	3.83
How would you rate your students' digital literacy skills? [1]	3 (5%)	20 (33.3%)	22 (36.7%)	10 (16.7%)	5 (8.3%)	2.90
How important are digital literacy skills in this day and age? [2]	0 (0%)	0 (0%)	2 (3.3%)	23 (38.3%)	35 (58.3%)	4.48
Over the past year, how often did you encounter difficulties using technology? [3]	0 (0%)	39 (65%)	14 (23.3%)	7 (11.7%)	0 (0%)	2.47
How effectively do you integrate technology into your teaching? [4]	2 (3.3%)	6 (10%)	35 (58.3%)	17 (28.3%)	0 (0%)	3.12
How effectively can your students search and apply for jobs online?	18 (31%)	17 (29.3%)	18 (31%)	5 (8.6%)	0 (0%)	2.17
How well do you prepare your students to use the Internet to search for a job? [4]	13 (23%)	12 (21.1%)	24 (42.1%)	8 (14%)	0 (0%)	2.47
How effectively can your students communicate professionally online? [4]	18 (31.6%)	18 (31.6%)	19 (33.3%)	1 (1.8%)	1 (1.7%)	2.11
How effectively can your students use social media responsibly? [4]	6 (10.3%)	26 (44.8%)	24 (41.4%)	2 (3.4%)	0 (0%)	2.38
How would you rate your ability to incorporate technology in your instruction:						
--To facilitate and inspire learning and creativity: [4]	2 (3.9%)	10 (17%)	33 (56%)	11 (19%)	3 (5.1%)	3.05
--Designing and develop digital age learning experiences and assessments: [4]	6 (10.2%)	8 (13.6%)	29 (49.2%)	15 (25.4%)	1 (1.7%)	2.88
--To model digital age work and learning: [4]	4 (7%)	9 (15.5%)	24 (41.4%)	16 (27.6%)	5 (8.6%)	3.16
--To promote and model digital citizenship and responsibility: [4]	3 (5%)	7 (11.2%)	24 (40.7%)	17 (28.8%)	8 (13.6%)	3.34
--To engage in professional growth and leadership: [4]	3 (5%)	9 (15.3%)	21 (35.6%)	20 (33.9%)	6 (10.2%)	3.29

[1] (1) Terrible --- Excellent (5); [2] (1) Very Unimportant --- Very Important (5) ; [3] (1) Never --- Very Often (5); [4] (1) Very ineffectively --- Very effectively (5)

Discussion

The results suggest that secondary special educators believe that their digital literacy skills are stronger than their students but still not as strong as they could or should be. These educators recognize the importance of digital literacy skills in the 21st century but still need targeted professional development to help them not only integrate technology into their curriculum but specifically to help students learn to use technology to acquire post-school outcomes such as getting competitive and integrated employment. However, additional research is still needed to verify that these educators actually have the digital literacy and integration skills that they report but also the best ways to support these educators in further developing their digital literacy and integration skills. For instance, questions remain such as whether a professional development workshop or course for inservice teachers would be enough or whether teacher education programs need to do a better job developing these skills early in a teachers professional preparation (e.g., during teacher education programs). Further, the open-ended responses in this study suggest that secondary special educators have different needs in terms of professional development, while some need to develop some basic skills (e.g., word processing) others are more advanced and in a place to develop more advanced skills.

References

Dede, C. (2010). Comparing frameworks for 21st century skills. In J. A. Bellanca (Ed.), *21st century skills: Rethinking how students learn* (pp. 51-76). Bloomington, IN: Solution Tree Press.

Fraser, J. (2012, May). 20 ways of thinking about digital literacy in higher education. *The Guardian*. Retrieved from http://www.theguardian.com/higher-educationnetwork/blog/2012/may/15/digital-literacy-in-universities

Johnson, D. R., Stodden, R. A., Emanuel, E. J., Luecking, R., & Mack,M. (2002). Current challenges facing secondary education and transition services for youth with disabilities: What research tells us. *Exceptional Children, 68*(4), 519–31.

Jones, B., & Flannigan, S. L. (2006). Connecting the digital dots: Literacy of the 21st century. E*DUCAUSE Quarterly, 29*(2), 8-10.

Littky, D., & Grabelle, S. (2004). *The big picture: Education is everyone's business*. Alexandria, VA: ASCD.

Schimel, K. (2015, July). Many students still lack digital literacy. *Education Dive*. Retrieved from http://www.educationdive.com/news/many-students-still-lack-digital-literacy/403261/

Van Ouytsel, J., Walrave, M., & Ponnet, K. (2014). How schools can help their students to strengthen their online reputations. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 87*(4), 180-185.

Veiga, C., & Herald, M. (2015, July). Kids can tweet, but many lack digital literacy skills. *eSchool News*. Retrieved from http://www.eschoolnews.com/2015/07/30/digital-literacy-skills-792/

Weiner, S. (2011). Information literacy and the workforce: A review. *Education Libraries, 34*(2), 7-14.