

Amelioration of Students with Autism Spectrum Disorder's Writing: The Usage of Electronic Journals

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Abstract

Identifying effective, evidence-based practices is essential for ensuring students' amelioration in all aspects of learning. Since the first call of inclusively educational settings, many students with different disabilities have been gaining knowledge through the core instruction of general education classroom. Accordingly, these individuals have the right to access this type of instruction, and build their knowledge with the strategic techniques presented by the teacher to scaffold information for students, especially those with autism. The purpose of the current investigation is to review the literature that identifies pedagogical practices and empirically based strategies to ensure success of students with autism by developing their learning skills such as writing. The lack of adequate writing skill is a significant predictor of students who are at risk of failure. This is due to the fact that writing is a representative of students' learning. This review of literature presents the effectiveness of using electronic writing journals for students with autism to improve their writing skill for more successful literal learning in inclusive environments.

Keywords: Writing platforms, autism, iPad

Writing is one of the essential skills for academic success of students. The ability to write efficiently is fundamental component to ensure the students' progression in learning fields. Students who lack this skill, struggle in their learning since writing is a way for demonstrating accumulative learning experiences throughout the academic year. According to Pennington (2009), the critical role of writing is demonstrated in its impact on the students' failure and success academically.

In assessments that depend basically on written performance, those who struggle in writing may not succeed. Students who present adequate levels of writing demonstrate high levels in other learning fields due to their abilities to adequately express their learning through demonstration of thoughts and ideas in written forms (Pennington, 2009).

In addition, the importance of writing is highlighted in its dominant role in career and employment fields. Many careers require writing as one of the basic qualifications of the employee (Pennington, 2009). Writing is another factor of social communication among people. Writing strongly influences the social interaction and communication among individuals. Pennington (2009) indicated that written texts are used between nations and people to express opinions and perspectives regarding various life matters. Accordingly, people created several tools for such written communication. These tools are now represented in the technological applications or programs that enable individuals to communicate and convey their opinions, perspectives or ideas in written texts any time at any setting.

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Therefore, writing demonstrates a significant role in developing individuals academically and socially. At school settings, educators utilize various tools for giving their students' opportunities to demonstrate their learning and express their perspectives regarding domains of knowledge they have encountered. One of these tools is the usage of writing journals (Dockrell, Ricketts, Charman & Lindsay, 2014; Pennington, 2009).

1. Writing Journals

Dyment and O'Connell (2010) defined writing journals as the medium or platform for writing perspectives, ideas or conceptions that express the individual's learning. Educators typically use writing journals to facilitate or support the process of learning. Students support the learned materials by demonstrating their understanding of it, its application and usage in daily life situations through their written expressions in their journals (Dyment & O'Connell). Furthermore, educators often encourage students to solve problems they may encounter in their learning. These solutions could be captured in written forms in their journals. The use of journals enables students to participate, share ideas and think beyond the text. Writing journals would be a tool to express students' thoughts regarding discussed issues in classroom discussion (Dyment & O'Connell).

Many educational tools and instructional strategies have historical roots by which these tools were introduced first in the educational field. According to Alsaleem (2013), the foundation of writing in journals were from the early Greek and Roman times when they used these forms of writing to demonstrate their linguistic written pieces of work. Educators encouraged their students to write in journals to motivate them to freely express their opinions regarding the issues at their time (Alsaleem). In addition, writing in journals was a means of communication. People used to communicate with each other by written messages. For such communication, handwriting was the only way for writing the individuals' thoughts or ideas (Alsaleem). With the apparent dominance of technology in the educational field, paper journals transferred into electronic ones to advert the same purpose of paper journals (Alsaleem). Several applications on the smart phones, such as WhatsApp messages, or portable digital devices such as iPod or iPad present effective platform for the new electronic version of the writing journals (Alsaleem). Shane, Laubscher, Schlosser, Flynn and Abramson (2012) indicated the usage of portable devices such as iPod, iPad or Android facilitates the process of communication using writing. This is due the variety of options these devices include to provide systematic and easy procedures for writing communicative texts (Shane et al., 2012).

2. What Do We Know about Autism?

Autism Spectrum Disorder (ASD) is one of the explicitly pervasive developmental disorders which impacts the individuals' interactions, performances in multiples social contexts and languages in communication with relatives and peers people (Smith, Polloway, Patton, & Dowdy, 2012). Individuals on the Autism Spectrum exhibit deficits in social communication and interaction (Smith et al., 2012). The US Department of Education (2014) defined individuals with autism as those who exhibit developmental disability that impedes their verbal and nonverbal communication or social interaction. This disability can negatively influence the student's academic performance. Most recognizable characteristics of individuals with autism include: their stereotypical movements and repeated behaviors, their resistance to the change of daily routine and inconsistent responses to daily life situations or experiences because of their lack to socially adaptive behaviors (USDOE, 2014).

In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM – 5), the American Psychiatric Association (2013) differentiates individuals with autism from others because of the manifestations of certain deficits in the areas of communication, socialization and reciprocal relationship. In addition, individuals with autism may manifest difficulties in social discussions or conversations. They may lack the ability to initiate a talk or respond in certain social interactions (APA, 2013).

Another characteristic of students with autism includes: the nonexistent of the body language. This is due to their inability in communicating using the nonverbal language.

This language involves the usage of eye contact, body language, gestures or facial expressions (APA). Furthermore, when it comes to language and socialization, students with autism demonstrate difficulties in adjusting behaviors that enable them to get along with relatives and peers. The appropriate adjusting behaviors are primary pillars in social contexts. Students with autism's deficits in adjusting to the social environment and communicational contexts impede their abilities to manifest typical children's playing. In earlier ages of childhood, typically developing children tend to imaginary play with peers or even solely. This ability is not often seen in children with autism's actions or playing. Children with autism might not tend to play with peers and make friends as their typically developing peers (APA). In contrast, students with ASD may have certain interests which are explicitly manifested in their strengths that lead them to work or engage in a field. They might really prefer a specific game, or studying field such as math or arts, and they often do not change these interests. According to Jordan, Caldwell -Harris (2012), when students with autism demonstrate an interest, as their typically developing peers, they have the need to fulfill a curiosity towards certain activities related to that interest. Accordingly, they engage in these activities to discover more and fulfill that need of exploration. Students with autism's interests lead them to perform more repetitive behaviors (Jordan & Caldwell-Harris). One of the basic diagnostic features of individuals with autism is their repetitive and restricted performances or activities in fields they are interested in (APA, 2013).

2.1 Students with Autism and Writing

Educators seek the effective approaches to promote all students' learning levels and ameliorate the nation's leverage in all fields of life including education. Accordingly, instructional strategies are being developed to improve students learning, especially, those with autism. Classroom instruction depends on the communication which takes place between the child and the teacher.

One tool of this communication is language. Research has highlighted the deficits in the linguistic areas of students with autism. Smith et al. (2012) stated individuals with autism demonstrate difficulties in performing appropriate prosody while speaking. They express their feelings with immature use of language including grammar or vocabulary. In addition, high functioning students with autism, including those with AS, display pragmatically problems when conveying opinions or expressing feelings, although they display adequate usage of grammar. Furthermore, individuals with autism often encounter challenges with abstract or idiomatic interpretations or expressions (Smith et al.).

Educators should consider these deficits when it comes to the improvement of students with autism's language. Improving language depends on the amelioration of the basic skills of language. These skills include the ability of writing and expressing mental thoughts in term of written texts or expressions. According to Asaro-Sadler (2014), when students learn how to write effectively they demonstrate their acquired knowledge and acquired skills. Therefore, writing is an essential skill in learning. It is one of the key aspects for ensuring students' understanding and responding to learning experiences adequately. Writing is one of the basic tools educators use to evaluate their students' learning and to determine their success in several educational domains (Asaro-Sadler).

Writing is not a simple skill; it is a combination of several skills. Pennington, Stenhoff, Gibson, and Ballou (2012) indicated that combined skills of writing are basically used to impact the readers' behaviors, feelings, perspectives or attitudes towards a piece of writing. Such impact is called the technical function. Pennington et al. emphasized the importance of the technical function of writing. The skill of attracting readers' attention and changing their attitudes towards the written pieces is fundamental. Attracting readers' attention is a prominent indicator that the written text was so impressive it could change readers' performances making them interested to continue reading these pieces (Pennington et al.). The ability of attracting readers' attention is essential to strengthen and reinforce the written contexts.

Unlike students without disabilities, students with autism lack the ability of composing a creative piece of writing that attracts their readers' attention and changes their attitudes or perspectives regarding what is written (Pennington et al.).

Because of the educators' strong postulations that all students with or without disabilities must have access to the general education core instruction, students with autism are included in general education classroom. According to Whitby, Travers and Harnik (2009), prevalence rates of children with autism have been increased. Students with autism are being included with their typically developing peers in general education classroom more than any time before. Accordingly, educators have to precisely consider the characteristics of students with autism to fulfill their needs and accelerate their learning levels. One of the skills that accelerate students' learning is writing skill. The improvement in writing skill assists all students to succeed in school and social lives (Whitby et al., 2009).

2.2 Autism and Writing Skill

The abilities and deficits of students with autism affect their learning writing skills. Writing is one of the methods of presenting knowledge and learning. Depending on the curricula, many students demonstrate their knowledge and understanding through written assessments. In the mid-1980s, there was a call for inclusively instructional environment for all students with and without disabilities. The advocates for inclusion called for unifying the general and special education systems. The goal was to create one system providing effective instruction and services for all students in one setting rather than spending time identifying appropriate approaches to teach students with special needs in separate in self-contained classrooms (Smith et al., 2012). Many students are being included in general education classes. All students have the right to a free and appropriate education; this includes full access to the general education classroom. Thus, educators must design effective instruction to ensure all students master the core curriculum including reading and writing (Smith et al.).

Although writing is an essential skill in learning, scant research has investigated interventions to improve the writing skills of students with autism (Asaro-Sadler, 2014). This could be due to the actual characteristics of students with autism. According to Asaro-Sadler students with autism exhibit deficits in cognitive and academic performances which negatively influence their abilities in writing. These deficits in cognitive performances include difficulties in higher levels of thinking, understanding abstract concepts and lack of imaginary representations of ideas and perspectives that impede efficient writing.

Other cognitive aspects such as difficulties in the organizational skills in writing, theory of mind and the ability to narrate abstractly create challenges for students with autism (Asaro-Sadler).

According to Gallagher and Frith (2003), theory of mind is related to the notion that the individual is able to interpret and attribute other people's behaviors or actions to their certain beliefs, desires or emotions. Whyte, Nelson and Scherf (2014) discussed the notion of theory of mind and students with autism's learning of idioms and syntax in language compared with their typically developing peers. The authors stated that although students with autism exhibit deficits in the theory of mind, students with high functioning autism could utilize their syntax and theory of mind abilities to predict and explain the idioms presented to them successfully. Whyte et al. pointed out that the syntactic ability or the ability to form grammatically correct sentences in the language could interact with the theory of mind. Therefore, these interactions can help individuals to comprehend idioms successfully. Thus, the ability of comprehending the figurative language which can be represented in idioms or metaphors depends on several abilities (Whyte et al.). These abilities may contribute in the process of comprehension. They may help individuals with autism to perform writing tasks effectively. Accordingly, the amelioration and development of successful strategies and techniques are essential to improve the writing skills of students with autism.

In this review of literature, the research was analyzed to identify effective instructional interventions for students in inclusive classrooms.

The contextual factors of effective learning and teaching practices were examined to identify effectively instructional interventions which ameliorate students with autism's writing skills in inclusive classrooms. An intervention was sought through the research. That intervention is basically the use of electronic journals by students with autism in writing activities and tasks. Electronic journals could be hosted in any format such as in iPad's app, computer's software or other programs. Limited number of empirical studies has been found supporting the notion of utilizing electronic journals for improving writing of students with autism. Therefore, this review of literature was expanded to involve studies that tackled the usage of several technological tools to improve writing of students with autism.

This review demonstrated the effectiveness of these software and programs in developing students with autism's writing. It highlighted the impact of the technology on students with autism's motivations and interests to engage in the process of writing. In addition, purposes and advantages of the electronic journals were demonstrated. This review of literature was designed to identify research based intervention for ameliorating writing skills for students with autism in inclusive educational settings. In specific, the electronic journals and the way they are presented to individuals with autism were investigated.

For identifying the review procedures, the actual steps of this research conduct must be explicitly demonstrated. Related literature of certain fields were read and discussed. These fields include: identification of students with autism, their prominent characteristics and their impact on those individuals' writing. The use of different software or apps as tools for improving writing of students with autism was also investigated and highlighted. The search process started with initiating discussions with one of my faculty members and classmates regarding the effectiveness of the iPads' writing applications for children such as Animals Counting Writing Game, or ABC 123 Reading Writing Practices app and others. The key terms used in the online search were: autism, electronic writing, and online journals. For obtaining the refereed empirical studies, Education Source and ERIC data bases which are offered by both University at Buffalo and Buffalo State College were consulted. In addition, previous literature reviews, articles from refereed journals and books which suit the areas were reviewed.

For conducting a valid review of literature, it is essential to present explicit definitions of the notions or concepts included and excluded in the process of search. If a study did not involve at least one of these following criteria, it was excluded from the review. These criteria are:

- A study's participants were from all the school stages
- The intervention was broadened to include software, apps or programs.
- The participants were with Asperger syndrome or high functioning autism.
- The selected study must be published within the last ten years (from 2004 to 2014).
- The language of instruction was English.
- The participants were native speakers of English.

3. Results

Although students with autism demonstrate difficulties in the basic learning skills, especially writing, many educators believe that there are various methods for improving writing skill for students with autism. Most implement appropriate intervention to that meets the student's specific with autism's needs and interests. Results demonstrated the effectiveness of the use of electronic journals to increase the writing skills of students with autism. Electronic writing journals are electronic platforms used for writing ideas and perspectives. The electronic writing journals could be presented to students in different forms. They can be presented in iPad or iPod apps, computer based programs such as software or online programs (Dyment & O'Connell, 2010).

In addition, Jordan and Caldwell -Harris (2012), stated that online forum was the preferable platform for students with high functioning autism to express their perspectives about daily activities and interests. Students cited the systematic procedures and the stable ways in logging in and out as desirable features. This feature corresponds with the one of the basic characteristics of autism which is their passion of routine, unchanged systems (APA, 2013; Caldwell-Harris, 2012).

The advantage of the online forum as electronic journal demonstrated a short term effect in improving their writing for the studied materials. It ameliorates their usage of the language by the repeated trials of writing. As long term effects, the forums will create in those individuals the sense of discovery and exploration of other platforms that may provide opportunities for more writing. In this way, those students would be more engaged in learning and discovering what fulfils their needs (Caldwell -Harris, 2012). The notion of using the online forums for increasing students with autism' writing was also investigated by Brownlow (2010). Brownlow pointed out that using the asynchronous discussion or speech for students has several long and short term advantages. When students with high functioning autism participated in such discussion, their writing improved since they would post several responses or replies for certain questions posed. These participants developed the writing, speech and usage of the language. In addition, these discussions increased their communication with other online participants. As stated in the method of conducting this review, Education Source data base was conducted to review research articles that dealt with the usage of electronic programs or application as platforms or journals for improving students with autism writing.

It is obvious that these articles highlighted the efficacy of intervening students with high functioning autism's writing skills by using electronic software, online program, forum or apps for this purpose. Table 1 demonstrates the empirically based articles that investigated the impact of electronic platforms, programs or apps for increasing students with autism's writing. In these articles researchers investigated the impact of these programs on a wide range of ages of participants, from preschool age to adulthood age. The researchers used iPad's apps, computer based and online programs. These various programs and apps used with different technology based platforms seemed to have a strong impact on the students with autism's writing skill.

Table 1: Electronic Writing Journals: Studies of School Students and Adults with High Functioning Autism

Study	Purpose	Participants	Setting	Findings
Jordan & Caldwell – Harris (2012).	Exploring differences in individuals with and without autism's interests in Internet discussions forums.	N = 213 without ASD. N = 211 with ASD	Online forums: WrongPlanet.net for ASD individuals. GoLiveWire.com for individuals without disabilities	Written posts of Participants with ASD were higher than posts of those without disabilities in the interests' areas.
Flores et al. (2014).	Examining the impact of story – based intervention using the iPad to improve social and academic performance.	N= 4, from pre – Kindergarten. N= 1 in grade 2. N= 2 in grade 3. Total N= 7.	General education classroom (inclusive classes).	Students' improvement in social interaction, writing the story script, and developing the scenes and actions associated with the script.
Pennington et al. (2012).	Investigating the impact of simultaneous prompting and computer-assisted instruction on writing responses to stories.	N = 1, age of seven.	Special education resource room within general education classroom.	The participant generative response is related to the stories' events he has read via the program.
Pennington et al. (2010).	Examining influence of simultaneous prompting and computer- assisted teaching written responses to stories.	N = 3, ages from Age range: from seven to ten.	Self – contained, special education classroom.	Effectiveness of the computer programs in increasing students with autism's abilities in constructing simple stories and responding to the read ones.
Carlson et al. (2009).	Investigating influence of Handwriting without Tears program on the neatness, clarity and readability of writing letters.	N= 2 preschool children.	Self – contained special education preschool classroom.	The increase of students' abilities to write letters by Handwriting without Tears program's platforms.

Conclusion

The effectiveness of electronic programs and technological applications for writing is clear in their impact on the students' writing abilities, especially those with disabilities. Learning settings whether they were schools or homes can be efficient learning environments. According to Schmidt, Rozendal and Greenman (2002), effective instructional strategies can be presented in places where students are frequently, sustainably and consistently encountering opportunities of reading, writing, listening and talking about literacy lessons. Therefore, it is important to develop the appropriate interventions and instructional strategies which effectively influence students with and without disabilities' performances in inclusive settings. This review of literature afforded the opportunity to recognize the research regarding the usage of technology to improving the writing of students with autism. It was clearly explained by these researchers that interventions, which were hypothesized including: online forums, computer based materials or programs or iPad's apps, are effective tools for ameliorating the writing skills of individuals with autism. Educators need to improve the performance of students with autism and deal with what might help those individuals to ameliorate their writing and other learning skills (Fleury et al., 2014).

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