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Content Analysis of Mathematics Book: Preparing Students with Intellectual Disabilities for Community Inclusion

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ABSTRACT

This study aims to analyze mathematics content of grade 6 book, at Intellectual Rehabilitation School of Education. Using, content analysis approach, this study analyzed the mathematics content presented in 6th grade mathematics book of students with intellectual disabilities in alignment with the adapted/modified Common Core State Standards CCSS of 6th grade mathematics. Findings indicated that although mathematics book presents primary math skills, it does not guide learners with intellectual disabilities to the ways of using such skills. Additionally, majority of the topical areas in this book were not age-appropriate, and consequently not well-preparing learners to independence, self-autonomy and therefore, successful community inclusion. Recommendations, and implications were also provided.

Key Words: Content Analysis, Mathematics, Intellectual disabilities, Life Skills.

Introduction

Inclusion of individuals with disabilities is one of the demands of national and international laws in all society fields and aspects including education. The Salamanca Statement and Framework for Action on Special Needs Education is the most significant international declaration/document has ever appeared in the field of teaching and educating individuals with disabilities (Ainscow, Slee & Best, 2019). Such statement, basically endorsed the idea of inclusion, affirming that individuals with disabilities have the right to education as their typically developing

peers, without discrimination (Wibowo & Muin, 2018). Inclusive education, and students with and without disabilities' access to learning content, will assist them acquire the required skills to accommodate them for community life, and the confrontation of its challenges. Inclusion and how to prepare students with disabilities to community/life demands are, in fact, a way of reducing the marginalization and isolation of those individuals (Adioetomo, Mont & Irwanto, 2014). In essence, they are to combat discrimination, creating an open society that accepts diversity and all individuals because all students matter, and they matter equally (Tan, Lambert, Padilla & Wieman, 2019).

Laws such as the Individuals with Disabilities Education Act (IDEA) 2004 and No Child Left Behind Act (2001) also highlighted the notion of inclusion of all students with and without disabilities in General Education environment to prepare them for future engagement in their societies (Bryant, Bryant & Smith, 2020). These two US laws highly influenced the development and improvement of Special Education services and the preparedness of including individuals with disabilities in Kuwait. Nationally, the Kuwaiti educational system is taking a massive step forward to include students with disabilities in General Education environment, preparing those individuals for society inclusion, afterwards, that requires them to be more self-autonomous, independent, having the empowerment to manage their life matters in all fields. Such movement fulfills the mandate of the Kuwaiti Law 8/2010 (2010) that states:

The Kuwaiti government is mandated to provide the educational services and facilities for individuals with disabilities in equity with the others without disabilities fulfilling the individuals with disabilities' special needs in communication, language and training, along with the adequate preparation of educational staff of teachers, professionals, leaders and paraprofessionals with high-levels of quality and professionalism to better educate students with special needs (Law No. 8, 2010, Article 9).

Thus, it is noted that the concepts of inclusion, and teaching students with disabilities in least restrictive environments are currently being transferred across cultures (from the experiences of teaching students with disabilities in US) to Kuwait. In Special Education

environment, although students with disabilities (i. e., severe intellectual disability) are studying in segregated, self-contained classroom settings, they are being instructed certain skills (such as life and functional skills in mathematics, social studies) to acquire the needed experience and get prepared for the larger, society inclusion. This corresponds with what Browder et al. (2004) stated that instructional curricula for students with moderate to severe intellectual disabilities should involve specific philosophic domains including: developmental, functional, social inclusions, self-autonomy, along with academics so those individuals would be able to succeed in the inclusive contexts with their peers without disabilities. Westling, Fox and Carter (2015) pointed out that strong consensus emerged among Special Education professionals that curriculum for students with severe disabilities (those who need to be well prepared for society inclusion) should concentrate on age-appropriate, functional skills. It is noted that there has been a shift from a developmental model to a functional curriculum model to emphasize the notion of teaching chronologically, age-appropriate skills (rather than mental age-appropriate skills) to have the opportunity to learn. Students with special needs will learn as their peers without disabilities, hence gain the academic and functional skills to fulfill their needs later in their lives. (Westling et al., 2015) added to provide adequate learning and instruction that engage students with disabilities in learning environment as their peers without disabilities, students with disabilities should be involved in the same learning standards their typically developing peers are encountering in the learning environment (i. e., Common Core State Standards [CCSS]), with doing certain accommodations and/or modifications on these standards in all subject areas when needed. Teaching students with severe disabilities life and functional skills increase their accessibility to society primary aspects (self-care, money management) along with the academic skills of reading, writing and mathematics (Cipani & Spooner, 1994).

Standards, Mathematics Content and Students with Disabilities

To help students with and without disabilities engage in a deeper and more conceptual understanding of mathematics, there should be an emphasis on understanding mathematical knowledge and following the

national and/or international standards that provide such focus when teaching different learning contents (Griffin, League, Griffin & Bae, 2013). According to Jimenez and Staples (2015), when Common Core State Standards (CCSS) for mathematics were introduced, they offered math educators an opportunity to prioritize content and practices to build the importance of math competence in all students including those with disabilities. The CCSS address the need to construct math competence in all students with or without disabilities, giving them a chance to learn and meet same high standards which enable them to access knowledge and skills necessary in their post-school lives (Jimenez & Staples, 2015). In the field of teaching students with disabilities, there has been a focus on bringing more grade and/or standard aligned math content and its instruction. The notion of accessing General Education curriculum by individuals with severe disabilities is highlighted by professional and practitioners (Jimenez, Browder, Spooner & DiBiase, 2012; Jimenez, Lo & Sanders, 2014). The CCSS give all students the right to access curricula that foster their knowledge regardless of their disability, capability and strengths (Hord & Bouck, 2012).

Rational/Justification of Using CCSS. Multiple reasons justified the adoption of CCSS in assessing/examining the mathematics learning content. According to New York State Education Department [NYSED], Engage NY (2012), CCSS are considered high standards that provide students a set of clear expectations to ensure that all of them including those with disabilities have required skills and knowledge needed for their success in college, career and post-school life. Additionally, these standards are highly recommended by researchers/educators since they (standards) are aligned to the expectations of colleges, workforce training programs and employers nationally (in US) and internationally. Moreover, the CCSS promote quality and equity in learning among all students, emphasizing the notion that all students should be well prepared to collaborate with their peers at schools, and later in society/community in US and abroad (NYSED, Engage NY, 2012). The researcher sought to examine the mathematics content in alignment with high-quality standards that are designed to increase the students' learning and success. Using CCSS across cultures (US and Kuwait) was intended by researcher to assess the book content.

Although standards pave and lead the way for professionals and educators to use methods/strategies and what learning content they should instruct, there is less concentration within Special Education on one of the current major trends in the field of teaching individuals with disabilities that is the research for raising standards in areas such as mathematics (Goransson, Hellblom-Thibblin & Axdorph, 2016). This contradicts the notion of inclusion which targets the accessible education on an equal basis to all students with and without disabilities. When utilizing the same standards (that are used when instructing students without disabilities) to teach learning content to students with special needs, this would give them an equal opportunity to access instruction and learning activities as their typically developing peers. Equal opportunities of accessing same learning standards, instruction, and learning content to both students with and without disabilities, would definitely lead to effective outcomes, preparing students with special needs to social engagement, and community inclusion afterwards in their post-school life.

Purpose of the Study

The current study aims to analyze the content of mathematics book (parts I & II) of 6th grade, that are taught to students with intellectual disabilities studying at the Intellectual Rehabilitation School of Education (IRSE), a public Special Education school. This school is a part of a complex housing 17 Special Education schools and 1 Kindergarten, located in Hawalli, Kuwait. Specifically, the purpose of this study is to investigate whether the mathematics learning content in the two parts of this book is adequately and effectively preparing students with intellectual disabilities to community inclusion by aligning it (the content) to credited mathematics standards. The study is also purposed to explore the notion that 6th grade mathematics book is basically presenting the needed functional, life along with the primary mathematics skills needed for students with intellectual disabilities to encounter life demands, and eventually preparing those students to community inclusion. Achieving the purpose of this study would be through answering the following research questions:

- 1 - By aligning the mathematics content to credited, Arabized CCSS, to what extent this book involves functional, life and primary mathematics skills needed by students with intellectual disabilities?
- 2 - To what extent is this content appropriate to the chronological age (to be age appropriate) for students with intellectual disabilities as indicated by the credited Arabized standards of CCSS?
- 3 - How does the content of this book build the skills needed by students with intellectual disabilities to appropriately and adequately encounter the community inclusion?

Literature Review

Mathematics Concepts and Community Inclusion

Prior literature showcased that learning mathematics is highly significant/essential for students, including those with intellectual disabilities. Mathematical skills (i. e., geometry, fractions, algebra, problem-solving) aid students with intellectual disabilities to absorb, glean their general connotations (i. e., why, where and how to use a certain math skill), and apply them in functional, life situations. These concepts, consequently, would pave the way for those students to successfully participate in community inclusion. According to National Mathematics Advisory Panel [NMAP], (2008), low achievements in mathematics lead to far-reaching educational, vocational and personal consequences. Failure in mathematics domains such as fractions is problematic (Jordan, Resenick, Rodrigues, Hansen & Dyson, 2017). The concept of fractions, for example, is a gateway to understanding other mathematics skills such as money change, telling the time, and how technology works (i. e., number signs on machines used in our daily life: washing machines, microwave) that eventually scaffold those individuals' experiences in being more independent, self-autonomous (Dyson, Jordan, Rodrigues, Barbieri & Rinne, 2020).

In a study of (Nikolic, Cvijetic, Brankovic, Dordic & Johnstone 2020), the importance of mathematics content and its beneficial gleans for students with intellectual disabilities, readying them for community inclusion were investigated. Using quantitative methodology, 249 children of grades 5 and 6, ages 11-12 with intellectual disabilities participated in the study. Results indicated that children could learn the

mathematics materials/content that were aligned to their daily needs (i.e., performance on solving life problems, purchasing items from groceries, paying utility checks, counting measures). These mathematical areas would be in need later in their life-situations, preparing students with intellectual disabilities for their home community inclusion (Nikolic et al., 2020).

(Szumski & Karwowski, 2012) studied 605 students with intellectual disabilities and their learning of mathematics content (problem solving, basic applications of addition and subtractions), and their social/community engagement (from their parents' perspectives and/or observations). Authors found out that the involvement of parents in (educating the mathematics content along) strengthened school instruction. Results also indicated mathematics content was greatly absorbed and applied in community situations with their parents. This was an indicator that mathematical, topical areas/skills prepare students with intellectual disabilities for their community inclusion.

In their study, De Graaf, Van Hove and Haveman (2013), 160 children with Down Syndrome participated. Results showcased that teaching mathematics skills, along with the parents' involvement were strong predictors of students' success and readiness for community inclusion. This corresponds with what Rivera and Baker (2013) indicated that it is essential to teach mathematical skills (i. e., numbers and operations, algebra, geometry, fractions, problem solving, representation, reasoning and proofs). The delivery of such content should be daily to students with intellectual disabilities "to assure that their math as well as their community living skills are being addressed" (Rivera & Baker, 2013, p. 14). Acquiring these skills may also accelerate their ability to function in more natural environment/contexts, tying academic along with functional skills together, making content more meaningful (Rivera & Baker, 2013). For example, an equation of ($3 + x = 5$) could be solved by a student who learned a content of algebra, and accordingly, this student could apply such knowledge when determining how much money is needed to purchase an item at a grocery store.

Literature Trends and Themes

After reviewing prior literature, only eight studies investigated the notion of mathematics content, analyzing and teaching it for students

with intellectual disabilities and its impact on their learning outcomes, and acquisition of needed skills for successful community inclusion. In a study for (Goransson et al., 2016), qualitative content analysis approach was used to identify aspects of mathematical competency content being taught to students with intellectual disabilities. Results indicated that standard aligned content shifted participants (with intellectual disabilities) focus to mathematics and using it their environment as a mean to invite the participants to practice competency related mathematics activities in and out-side school contexts.

Using descriptive analysis, Garderen Scheuermann and Jackson (2012) examined the extent to which the 6th and 7th grade mathematics books incorporated recommended instructional practices for students with disabilities to help develop representational ability. Results showed that these textbooks provided little of representation skills (i. e., how to generate) for students. Results also indicated that these books did not provide enough instructional information and support to develop representation ability. (Bouck, 2012) analyzed National Longitudinal Transition data (surveying parents, teachers and students) of secondary students grades 9-12 with moderate to severe intellectual disabilities to understand curriculum including content to: determine whether it is grade/standard aligned, and consequently if it is preparing and/or positively increasing their post-school outcomes. Results indicated that the majority of students with moderate and severe intellectual disabilities received functional and core content aligned with grade level and/or standard. However, the delivery of such content (through instruction) primarily was in pull-out, educational environment not with their typically developing peers.

Lee, Browder, Flowers and Wakeman (2016) derived educators' evaluations of the mathematics textbooks whether these books are grade/standard aligned for students with significant cognitive disabilities. Eighty percent of respondents agreed that books were standards aligned, presenting age-appropriate content knowledge for students with significant cognitive disabilities. According to Karl, Collins, Hager and Ault (2013) highlighted the notion that standard aligned, chronologically, age-appropriate content, which is taught to their typically developing peers, would increase students with disabilities' functional along

with primary, core mathematics skills, and generalize such skills to functional tasks in real-life situations (Chapman, Ault, Spriggs, Bottge, & Shepley, 2019).

In Brosh, Root, Sanders, Spooner, and Fisher's (2018) study, authors analyzed mathematics content and found out that when content is chronologically age appropriate (with doing the needed accommodations and/or modifications), it would be helpful in developing learning skills of students with intellectual disabilities, and they easily acquire such skills whenever are taught to them at school. This result corresponds with: students with intellectual disabilities would have a great opportunity to access General Education learning content whenever it (content) is appropriate to their needs, and abilities and could be used (skills) in their post-school lives (Browder, Spooner, Wakeman, Trela & Baker, 2006). Goo, Maurer and Wehmeyer (2019) highlighted the notion of the importance of academic and functional mathematics skills acquisition which assists students with developmental disabilities (i. e., intellectual disabilities) in leveraging the level of confidence and independent living without the help of others and/or guardians. Consequently, this would develop the quality of those individuals living and engagement in the inclusive environment of their community and society (Cannella-Malone, Brookes & Tullis, 2013; Kelly, Test, & Cooke, 2013).

Research of (De Graaf et al., 2013; Nikolic et al., 2020; Szumski & Karwowski, 2012) demonstrated the results of teaching mathematical skills (mathematics content) to students with intellectual disabilities and the outcomes gained in the participants' social, community participation and inclusion.

As abovementioned, only 8 research articles investigated the idea of mathematics content analysis and its beneficial aspect for teaching students the needed mathematical skills and concepts. Accordingly, the current study was an attempt to fill in the gap(s) found in prior literature.

Methodology

Design

Descriptive analysis method was used to analyze mathematics textbook, of 6th grade of Intellectual Rehabilitation School of Education (IRSE), content without using/referring to teacher's guide. As

previously indicated by both Judeh and Harb (2018), descriptive analysis of a book content gives a fairly detailed image of what the content is presenting and how it is benefiting learners. The researcher analyzed the content of such book by analyzing its units and exploring whether such units present essential elements/concepts (Alghamdi & Altemeami, 2018) that should be taught to students with disabilities in alignment with CCSS.

Materials

Materials of the current study involved (the mathematics IRSE book) and the CCSS. Generally, all the topical areas in both parts of the book were examined and assessed.

Mathematics Book. IRSE mathematics book, of 6th grade, the two parts/volumes, first edition 2015/2016 was evaluated. Each part/volume is being taught in an academic semester. Major topical areas of the textbook were as the following: Number and counting: addition, subtraction, multiplication and division, number value, ascending and descending orders, fractions and decimal fractions, geometry concepts: angle measures and drawing, triangle and quadrilateral shapes. See appendix B for the detailed topical areas.

Core standards. Common Core State Standards were the core standards used in this study. Such standards were adapted, modified and/or accommodated for the rubric creation, and fulfilling the purpose of this exploration. The discussion of the standards in the rubric is provided in the next section (Research Instrument).

Research Instrument

Referring back to 6th grade mathematics, NY CCSS (New York State Education Department [NYSED] (2012), the researcher created a rubric that involved Arabized, modified/accommodated CCSS to analyze the mathematics content of the book. The standards selected for the rubric were: (a) making sense of problems and persevere in solving them, (b) viable arguments, discussion construction and critiquing the reasoning of the others, (c) using appropriate mathematical tools strategically, (d) modeling with mathematics, (e) geometry problem solving: areas, surface areas, volumes, and (f) developing understanding of statistics and probability, and application of distributions. In the rubric, the researcher added accommodated and/or modified sub-standards for each main one.

For example, sub-standards involved items that assessed whether there were applications and/or content lessons, would appropriately help students with intellectual disabilities to generalize the content in real life problems, and different contexts. Additionally, the rubric involved items/sub-standards that focused on solving problems in reality (i. e., writing/interpreting, explaining statements of order for rational numbers in real-world contexts: writing $-5\text{ }^{\circ}\text{C} > -10\text{ }^{\circ}\text{C}$, eventually the student should be able to express that $-5\text{ }^{\circ}\text{C}$ is warmer than $-10\text{ }^{\circ}\text{C}$). Consequently, the rubric was built to assess whether the content was assisting students with intellectual disabilities to acquire essential (functional and academic) mathematics skills needed in their social engagement and community inclusion. See Appendix (A) for the rubric.

Data Analysis

Method of Data Analysis

Content analysis was used as a method/strategy for data Collection and analysis. The key behind analyzing any learning content of a book is to develop such content to benefit students with and without disabilities, improving their learning outcomes. In essence, the learning content should be aligned to credited standards to increase the students' learning performance, preparing them for life demands, and giving them opportunities to use these learning skills for more independence and empowerment later in their lives (Taieema, 2004). In addition, Alkhalwala and Eid (2014) highlighted that content analysis leads to achieve the goals: (a) quantitative confinement /limiting and observation the notions and concepts of the textbook, (b) employment: benefiting from such analysis to plan for the students' learning process and eventually, expanding and increasing their learning opportunities, (c) evaluation and development: educators will be able to evaluate and assess such textbooks, modify them, continue using or changing them.

For this study, learning content of the mathematics book (parts I & II) was analyzed with the use of the rubric. Each rater read the entire book, and independently assessed/checked the thread and its item(s) that were presented in the book. If the item was available 10% was given. If, to some extent, the item was available (not really clear in the

content) only 5% was given. Zero% was given for unavailable item(s). Then, a percentage for each thread was calculated, and total percentage(s) for all the available items was calculated.

Validity: Huck (2012) relates validity to the notion of accuracy. Huck stated that validity is often proven through some sort of comparison. One of the validity concepts/methods that was used for validating rubric's data is content validity. Content validity is "determined simply by having experts carefully compare the content of the test against a syllabus of outline that specifies the instrument's claimed domain" (p. 82). Accordingly, the research's rubric was reviewed by three referees specialized in Special Education and mathematics to get their comparisons of the instrument with the outlined NY CCSS. The researcher updated the rubric incorporating the referees' feedback before the analysis process commencement.

Reliability: Reliability is associated with the concept of consistency (whether data are consistent and stable over time) (Huck, 2012). A reliability method used in this research was interrater reliability. Such approach to reliability, is basically data are collected "by having raters evaluate a set of objects, pictures, applicants or whatever" (p. 75) to get their agreement. Two raters (the researcher and a Special Education professor) independently assessed the book content using the refereed rubric. The researcher explained the items of the rubric to the second rater, and an interrater agreement of 81% was reached (between raters) during training before the actual assessment. A point-by-point agreement ratio was used to derive agreement. The formula for estimating the point-by-point agreement was: $(\text{agreement} / (\text{agreement} + \text{disagreement})) \times 100$. A minimum of 80% agreement was required for interrater reliability to represent high reliability coefficient (Huck, 2012; Pierangelo & Giuliani, 2012). An agreement of 90% obtained between the raters. Such result fell above the minimum standard suggesting high reliability coefficient, securing valid and reliable result.

Results: As abovementioned, percentages for each thread (standard) of the rubric were calculated to figure out to what extent such standard was available in the content and accordingly derive results of the study. Results of data analysis are presented in alignment with research questions:

Findings of Question 1: By aligning the mathematics content to credited, Arabized CCSS, to what extent this book involves functional, life and primary mathematics skills needed by students with intellectual disabilities?

After deriving percentages for the main standards in the rubric, it was deduced that the content included primary academic skills (i. e., calculations and fractions), and less functional skills in mathematics (that are essential for life independence and autonomy). Rubric data indicated that the first standard “making sense of problems and persevere in solving them” was represented in almost 50% of the book content/topical areas. This standard and its sub-items focused mainly on how to apply academic content in real life problems and to express understanding of this content. It was noted that the primary skills of calculating (i.e., division, subtraction.. etc.) were available. Yet, the content did not provide lessons that teach students in what situations or where learners would use/see these concepts. The second standard on the rubric was: “whether the content motivates/engages students for viable arguments, discussion construction and critiquing the reasoning of the others. Specifically, the items and/or sub-standards focused on whether the content involved the notions of recognizing positive and negative numbers on number line, and how learners (students with intellectual disabilities) would use this concept in understanding mathematical contexts or situations such as weather temperature (i. e., 2 C is warmer than -2 C) or when the bank account is with -15 Kuwaiti Dinar (KD), that would mean that the account is overdrawn. Nevertheless, results demonstrated that this standard and its sub-items gained 0% in alignment with the credited standards of CCSS. The content did not involve any topical area that concentrates on using numbers in the mathematical situations: knowing the weather temperatures, or available or unavailable money in bank accounts, for example. These are functional skills needed for students with intellectual disabilities to ensure their successful independence later in their post-school life.

For the third CCSS that focused on the use of appropriate mathematical tools strategically in mathematics problems (i. e., when to use addition, subtraction), results demonstrated that 70% of the book

content involved topics aligned with that standard. As noted, the content shifted learners' attention to the type of a mathematical tool, and when to use it in the book exercises. The content showcased, to a certain degree, that mathematical tools could be used to solve the mathematical problems (ones taken in class), and therefore, learners could use the tool(s) to strategically solve the problems (in their book, class worksheet and/or homework). Furthermore, it was noted the content provided learners with topics that need the learner to solve multi-step, math problems (i. e., problems of ascending/descending number orders, vertical multiplication).

The standard of modeling with mathematics was only 25% available in the mathematics content. The book provided, to some extent models on how to solve the mathematics problems. However, it did not provide any further explanation on how to achieve/do the multi-step math tasks. It did not provide instructions or certain strategies on how to approach the solving of the problems (i. e., organizing the place values of the numbers of millions before doing the summation/subtraction process). Students with special needs, specifically with intellectual disabilities, need an explicit, direct straight forward explanation/instruction for learning multi-step skills (Archer & Hughes, 2011).

For the chapter of Geometry, only 50% of its content aligned with CCSS. Most of the topics/lessons of this chapter involved drillings on how to calculate areas of quadrilateral, triangle and/or circle. Additionally, it focused on how to find angles of the triangle and/or quadrilateral shapes, without a focus on where the learner would find such shapes (i. e., at home, school classroom), or calculating real-life shapes (i. e., classroom clock, gym window..etc.). Results demonstrated that content did not involve any topical areas/lessons on the standard “developing understanding of statistics and probability, and application of distribution” (0% was obtained). The content neither involved general concepts of what probability is (in layman/easy descriptions) nor where and how to use probability in daily life descriptions or questions (i. e., “what is the age of kindergarten students?” is different

from “what is this child’s age?”) The first needs the range of ages (e. g., 405 years old), the second is the child’s actual age. See Figure2 1 and 2 for visual display of data analysis.

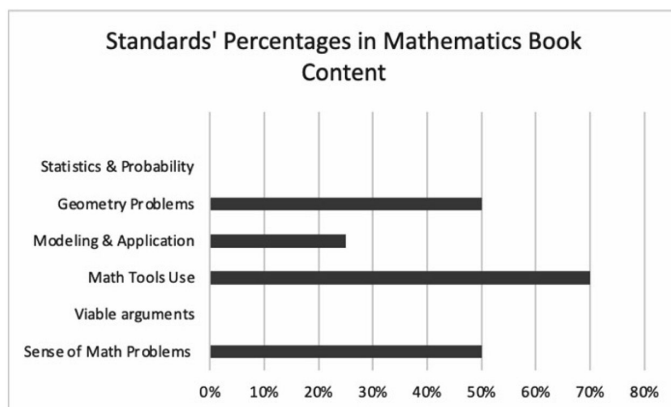
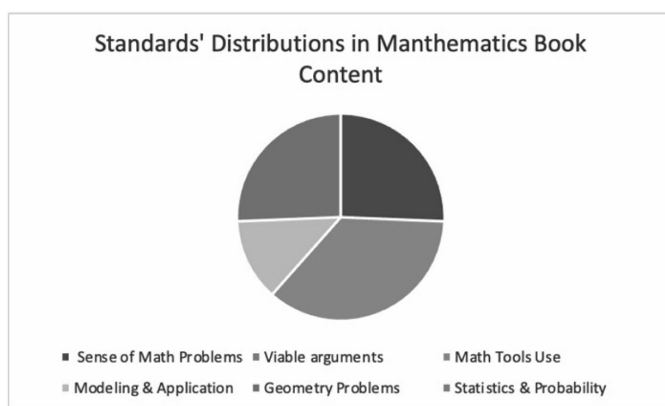


Figure 1. Standards' Percentages in IRSE 6th Grade Mathematics Book Content



Figures 2. Standards' Distributions in IRSE 6th Grade Mathematics Book Content

Findings of Question 2: To what extent is this content appropriate to the chronological age (to be age appropriate) for students with intellectual disabilities as indicated by the credited Arabized standards of CCSS?

Results manifested the notion that content presented in IRSE mathematics book, of 6th grade did not provide several chronologically, age appropriate lessons. Research data revealed that percentages of 50%-70% of the content dealt with primary mathematics academic

skills, and less than 25% focused on the application of such skills and generalizing them in real life situations. This is indicative that several of the content topical areas were not age-appropriate. The credited standards (NYS CCS) focused on chronological age suitable learning skills needed by learners in this grade level (6th). Yet, the book content did not tackle this, presenting lessons that took the surficial notions of mathematics skills, with less concertation on deep meanings of these concepts (why, where and how we use/apply such mathematical tools/concepts). The demand to construct math competence in all students including those with special needs, below and/or above grade level expectations is addressed by CCSS (Jimenez & Staples, 2015). In essence, all students with and without disabilities (if successful community inclusion is sought), must obtain the opportunity to learn and meet the high standard along with necessary knowledge and skills to meet the demands of their post-lives (Common Core State Standards Initiative [CCSSI], 2020). As indicated in prior research, an effectively successful learning content that shapes students' learning skills and positively impact their learning outcomes must be age appropriate, fulfilling the learning demands in a school level (Browder et al., 2004). As their typically developing peers, students with disabilities have the right to access General Education standards and content for better preparedness for social engagement and inclusion (Jimenez & Staples, 2015). Likewise, bestowing students with special needs including those with intellectual disabilities the opportunity to access same modified and/or accommodated learning content would accelerate their learning outcomes that eventually aid them to be more self-determined, capable of encountering life matters successfully and adequately (Goransson et al., 2016).

Findings of Questions 3: How does the content of this book build the skills needed by students with disabilities to appropriately and adequately encounter the community inclusion?

To ensure the construction of appropriate, adequate skills needed for community inclusion, students with disabilities should be provided with opportunities to access functional mathematic skills along with the academic ones. Basically, the learning and use of functional skills (i. e., counting money, knowing temperature, time), applying them in multiple contexts enable students with disabilities for doing daily routines, tasks,

chores, and communicate with typically developing peers in and out-school contexts (Griffin et al., 2013). Shaping students with disabilities' functional skills along with academics, would consequently aid students with special needs to generalize such skills across multiple contexts and/or subject areas (Root, Cox, Hammons, Saunders, & Gilley, 2018). Nevertheless, results revealed that content had less focus on the application of the needed (i. e., functional) skills to maintain and generalize to the inclusive environment, and community. That is due to the fact that less than 25% of the content lessons were tackling on application and generalization of the learned skills by learners with intellectual disabilities. This result would bring up the notion that students with intellectual disabilities would not have the appropriate skills, capabilities to generalize this learning, specifically not having the guidance/knowledge on how to use them in reality and accordingly, would not be prepared for community inclusion.

Discussion

Mathematics is one of the highly essential content areas needed for students including those with intellectual disabilities. Study's results demonstrated that many (major areas/topical areas) were not presented in 6th grade, IRSE mathematics book, although such topics are necessary and highly influential in improving students with intellectual disabilities accessing daily knowledge, and accordingly, maintaining and generalizing it independently. Only 18% of the rubric's items (credited standards) were available in IRSE mathematics, 6th grade book. Twenty-seven percent of the rubric's items were to some extent (partially) available in the content of mathematics book. Consequently, 45% of the rubric's items were available and to some extent presented in the book, and 55% of rubric's items were not available. Apparently, almost half of the standards on the rubric are not taught for students with intellectual disabilities. Notably, the available topics (that are also important for the students with intellectual disabilities learning) are not connected to real life. This result does not align with prior research of Rivera and Baker (2013) in which they highlighted the need of connecting mathematical content to students with intellectual disabilities daily routines/environment to be more meaningful and fruitful. The book content presented the lessons of mathematical processes

without associating them to real life situations to assist students to maintain and generalize these skills and/or helping them build these skills. This finding was not fulfilling the need of presenting content learning to students with intellectual disabilities and helping them make use of it in different situations/contexts as emphasized by Browder, Spooner, Ahlgrim-Dezell, Harris and Wakeman (2008). Thus, students with intellectual disabilities would be unable to maintain and generalize the learned skills. Learned content did not help students build their (functional, academic skills), which consequently, will be affecting their likelihood of being more independent (Root et al., 2018).

Additionally, academic skills could be applied with several daily vocational (e. g., making a purchase) and leisure contexts (i. e., counting used in playing mathematics video games) for accelerating life quality (National Mathematics Advisory Panel [NMAP], 2008). Nevertheless, academic skills presented in the book content were not connected to vocational, social, leisure contexts.

Book contents usually help students with intellectual disabilities learn and support their learning (by presenting examples of how to apply, generalize) what they learn to different contexts. Yet, IRSE mathematics book content to some extent did not tackle the notion of learning application. Such result corresponds with Garderen et al.'s (2012) results that many book contents do not meet basic criteria to support the learning of students with disabilities. Study's results indicated that many resources (tasks, topics) in IRSE book content did not provide standard aligned mathematics. Lee et al. (2016) pointed out that special educators should focus their instruction to teaching more standard-aligned resources, helping students with disabilities learn and willing to try new concepts (they studied) in their post-school life.

As aforementioned, it is highly important to help students with intellectual disabilities generalize and use academic knowledge to solve problems encountered when they are included in community. According to the study's data, book content did not involve statistics and probability, and therefore, they could not answer or participate in social communication (i. e., about range of vocations, ages.. etc). This does not correspond with Chapman et al. (2019) that standard aligned

content provides additional demonstration for students with intellectual disabilities on how to solve tasks in inclusive, real-life scenarios and situations.

Limitations, Recommendations and Implications

The current study involved certain limitations. The first limitation was the focus of the study strictly was on mathematics content of Intellectual Rehabilitation School of Education 6th grade book. It is important to investigate other content areas (i. e., language arts, science) to see whether the content is standard-aligned, and accordingly age-appropriate, preparing students with intellectual disabilities for community inclusion. The second limitation was the grade level. This study analyzed mathematics content of 6th grade. Future research should consider content analysis of other grade levels to explore to what extent students with intellectual disabilities are being well-prepared for community/society inclusion. This brings up to attention that the current study explored the mathematics content that is being taught in Intellectual Rehabilitation School of Education. It is essential to investigate and analyze content of other subject areas in other schools for students with other types of intellectual disabilities (i. e., Down Syndrome) who are being taught at Alwafa schools.

A third area of limitation was related to analysis of content of self-contained, special education classroom for students with intellectual disabilities. It is necessary to look for contents that are being taught to students with and without disabilities in general education classrooms and see whether students with and without disabilities are being assisted/prepared for including them with their peers in society. Future research should consider such limitations and try to investigate them in other studies to explore the effective practices for better preparing students with intellectual disabilities for society and community inclusion.

Additionally, using the results of this study, book authors could develop mathematics book content to be more age-appropriate, and standard-aligned. They could use the findings to explore the areas of weaknesses, modify them, improve and enhance the areas of strengthens in more depth. They could utilize the study's tool to leverage the level of content to help students with intellectual disabilities acquire the needed information and knowledge for the community involvement,

increasing their self-confidence, autonomous, and dependence. Book authors and/or educators should adopt credited standards when evaluating, developing and creating books so their contents would be more applicable to learners' real lives and they can get involved in their community/society.

تحليل محتوى كتاب الرياضيات: إعداد الطلاب ذوي الإعاقات الذهنية للدمج المجتمعي

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الملخص

تناولت هذه الدراسة تحليل محتوى كتاب الصف السادس للرياضيات في مدرسة التأهيل الفكرية، التابعة لإدارة التربية الخاصة بوزارة التربية، دولة الكويت. باستخدام منهجية تحليل المحتوى، تم تحليل المحتوى المقدم في كتاب الرياضيات للصف السادس للطلاب ذوي الإعاقات الذهنية بالترتيب/المقارنة مع المعايير الأساسية المشتركة الأمريكية للصف السادس لمادة الرياضيات. توصلت النتائج إلى أنه على الرغم من أن الكتاب يقدم مهارات الرياضيات الأساسية، إلا أنه لا يرشد المتعلم ذا الإعاقة الذهنية إلى الأسلوب في استخدام هذه المهارات. كما أن معظم الدروس والمواضيع في الكتاب غير ملائمة لعمر الطلاب؛ وبالتالي لا تهيئ المتعلمين ذوي الإعاقات الذهنية للاستقلالية، والتفسير الذاتي؛ وبالتالي إلى النجاح في الدمج في المجتمع. كما خلصت الدراسة إلى مجموعة من التوصيات لأبحاث ودراسات مستقبلية.

الكلمات المفتاحية: تحليل، المحتوى، الرياضيات، الإعاقات الذهنية، مهارات.

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