

Academic and Functional Curricula for Students with Intellectual and Multiple Disabilities: Teachers' Perceptions

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Abstract

Students with intellectual and multiple disabilities face the question of whether they are taught using an academic or a functional curriculum. Previous writings on this issue have emphasized that the choice of curriculum has critical consequences for how these students will acquire the foundation for living and engaging successfully in community life. This study examined the extent to which academic and functional curricula were currently provided for students with these disabilities in the city of Riyadh, Saudi Arabia. It provided novel data on this question by examining the extent to which specific needs of these students were being met by both types of curriculum. The researcher conducted the quantitative design model, and the total sample of the study included 209 special education teachers. Where the meeting of these needs was concerned, it was found that provision of an academic curriculum in Riyadh schools ranged from weak to average levels, while provision of a functional curriculum ranged from average to high levels. Limitations and implications were presented..

Keywords: special education teachers, academic curricula, functional curricula, intellectual disabilities, multiple disabilities.

المنهج التعليمي والوظيفي للطلاب ذوي الإعاقات الفكرية والمتعددة: وجهة نظر المعلمين

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الملخص

الطلاب ذوو الإعاقات الفكرية والمتعددة يواجهون مسألة، ما إذا كان يتم تدريسهم من خلال استخدام المنهج التعليمي أو الوظيفي. وقد أكدت الأدبيات بشأن ذلك في أن اختيار المنهج له عواقب حاسمة في كيفية أن يكون لهؤلاء الطلاب أساس للعيش والانخراط بنجاح في الحياة المجتمعية. فحصة هذه الدراسة مدى تقديم المناهج التعليمية والوظيفية للطلاب ذوي الإعاقة الفكرية والمتعددة في مدينة الرياض، المملكة العربية السعودية. وقدمت هذه الدراسة معلومات جديدة حيال هذه المسألة من خلال دراسة مدى تلبية الاحتياجات الخاصة بهؤلاء الطلاب من خلال تقديم كلا النوعين من المناهج الدراسية. واستخدم الباحث في هذه الدراسة التصميم الوصفي، وشملت العينة الكلية للدراسة (٢٠٩) من معلمي التربية الخاصة، وبما أن تلبية هذه الاحتياجات كان محور الاهتمام، أظهرت نتائج الدراسة أن تقديم المنهج التعليمي في المدارس بمدينة الرياض يتراوح من المستوى الضعيف إلى المتوسط، بينما تقديم المنهج الوظيفي لهؤلاء الطلاب تراوح بين المستوى المتوسط إلى المرتفع. تم عرض القيود والآثار المستقبلية للدراسة.

الكلمات المفتاحية: معلوم التربية الخاصة، المنهج التعليمي، المنهج الوظيفي، الإعاقة الفكرية، الإعاقات المتعددة.

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Introduction

Students with Significant Cognitive Disabilities (SSCDs) have the right to be educated in general-education classrooms; laws such as the United States' Individuals with Disabilities Education Act (IDEA, 2004) and No Child Left Behind (NCLB, 2001) support the needs and wants of SSCDs by providing appropriate programs and services that they will need throughout their lifetimes. In fact, such laws will help, support, and protect all individuals with disabilities so that they may live life to the fullest. For example, the IDEA regulations help to place individuals with disabilities in appropriate circumstances and in environments that support their living needs. The IDEA has led to improved access to general-education classrooms for individuals with disabilities by mandating the services they need: this law offers those individuals equal opportunities to be educated and to receive the necessary services. The purpose of the NCLB act is to close the achievement gap between able-bodied individuals and those who have disabilities or are at risk of failure in school.

The role of general-education teachers differs from the role of special-education teachers. Each setting, whether inclusive or self-contained, requires skills and abilities to teach children with severe disabilities: training is thus important if the appropriate curriculum is to be provided – that is, functional or academic – and if effective learning environments for students with severe learning needs are to be offered. Even more importantly, when teachers teach and use effective curricula, the outcomes will be positive for children with severe disabilities throughout their lives. General teachers as well as parents play critical roles in supporting

young children with severe disabilities in inclusive settings, but they do need to collaborate with all the members of the educational community to help them get the knowledge and skills to work with children (Brownell, Sindelar, Kiely, & Danielson, 2010). As Dymond et al.'s study (2006, p. 293), notes, "96% of the general and special educators at one high school believed students with significant cognitive disabilities (SCD) should access the general curriculum in general-education classrooms whereas only 56% believed access should occur in a special-education classroom".

In order to achieve access to a general curriculum for SSCDs, the educational establishment must consider that teachers need foundational information about academic content, and they need to know how they can teach academic skills to these students effectively even though "the field does not yet have 'evidence-based practice' for how to teach skills that link to grade-level standards" (Dymond, Renzaglia, Rosenstein, Chun, Banks, Niswander, & Gilson, 2006, p. 320). In addition, teachers need to know how to develop Individualized Education Programs (IEPs) and instructional plans that link with new state standards (Browder, Spooner, Wakeman, Trela, & Baker, 2006). In fact, teachers need to be trained in how to link the curriculum they teach to grade-level academic content standards for SSCDs (Downing, 2006).

Alternative assessments are important for SSCDs. It allows "students with significant cognitive disabilities to be assessed on extended or alternate standards that are aligned with the overall state standards" (Almond & Case, 2004, p. 2). Indiana Department of Education (2010) explains the need for alternative assessments for students with intellectual disabilities, especially children whose intellectual disabilities are significant, asserting that it is vital to meet criteria of participation in alternative assessments for these students. "The cognitive disabilities of these students have been determined to preclude the achievement of grade-level proficiency. It is expected that includes less than 1 percent of the student population" (Indiana Department of Education, p. 43). This indicates that these children must have alternative assessments, which are based on their achievement standards, in order to be provided appropriate services in and out of school. They will acquire more skills that they will need throughout their lifetimes.

The Literature Review: Academic and Functional Curricula

Ayres, Lowrey, Douglas, and Sievers(2011) stress the importance of a functional curriculum for SSCDs; these authors believe that such a curriculum leads to more independent lives for them and will help to improve their future quality of life. This is profoundly true, because these students have a significant need to learn functional skills for living throughout the day. Acquiring daily living skills is essential for them. Teachers and parents, whilst setting on an IEP, stressed the importance of a functional curriculum. One parent said that his son could identify the Saturn in many lessons, but he was unable to request a snack or care for himself (Ayres, Lowrey, Douglas, & Sievers, 2011, p. 12). The critical Present Levels of Academic Achievement and Functional Performance (PLAAFP) portion of an IEP will help to combine both curricula – functional and academic skills – in order to assist students with severe intellectual disabilities to obtain many necessary skills. However, it is essential to focus on functional skills, with some basic academic skills, which these students need in their daily lives, such as consumer, community, and self-help skills. All teachers - general- and special-education teachers alike -must consider the needs and abilities of SSCDs in order to develop instruction that will help these students to achieve important skills, either basic academic or functional skills.

As mentioned earlier, it is important to consider IEPs in linking a basic academic curriculum with a functional curriculum. A study by Bouck (2012), focussed on data from the National Longitudinal Transition Study-2 (NLTS2) in order to realize the school curriculum and education programs for secondary students with moderate to severe intellectual disabilities, and the relationship between curriculum and post-school outcomes. Bouck's findings mention that a majority of this population participated in a functional curriculum that also focussed on core content areas. Nevertheless, these students were frequently educated in pull-out educational settings.

Integrating SSCDs into general-education classrooms is very beneficial for them. However, they need a specialised curriculum based on their abilities and needs, and the Common Core State Standards Initiative, a set of

standards agreed upon by various US states, does not address these needs. According to Ayres et al. (2012, p. 16), “students with severe disabilities need more than the common core”. This suggests that students with severe disabilities deserve full educational opportunities just as their peers do. In fact, all teachers should look for abilities rather than looking at disabilities. This means that it is important to focus on the abilities of students with severe disabilities whilst integrating them into general classrooms. They will learn many skills that will be very beneficial for them as they engage in community life. Moreover, they will learn positive behaviours from exposure to students without disabilities. SSCDs also acquire some good learning skills because some students without disabilities will assist them to get these skills. For instance, students with severe disabilities often will acquire mathematics skills with assistance from students without disabilities. Teachers must in addition consider the curriculum for SSCDs based on their needs and abilities in order to help them enhance their basic academic and functional skills (Collins, 2007).

It is very important to listen to the families of SSCDs in order to gain perspective about which curriculum is effective to teach. As Ayres, Lowrey, Douglas, and Sievers(2012, p. 21) mention, “An individualized, meaningful curriculum is the most appropriate curriculum to help students attain meaningful adult outcomes that directly increase their quality of life”. This means that when teachers focus on the functional curriculum for these students, there will be positive and long-lasting outcomes during those students’ lives.

Kleinert, Towles-Reeves, Quenemoen, Thurlow, Fluegge, Weseman, and Kerbel(2015) conducted a study of in 15 US states and 39.837 students to examine the extent to which SSCDs got received an alternative assessment of access to general-education classrooms and the extent to which this access was related to expressive communication, using augmentative alternative communication (AAC) and to mathematics and reading skill levels. About 93% of these students were taught in self-contained classrooms or special schools, whilst 7% were taught in general-education classrooms. Expressive communication and mathematics and reading skill levels were associated more with inclusive settings, whilst

AAC was provided more in self-contained classrooms.

Agran, Alper, and Wehmeyer (2002) conducted a study of teachers' perceptions of access to a general-education curriculum for SSCDs. Questionnaires were sent to 200 teachers. The results showed that most of the teachers believed students with severe disabilities could not be taught in the general-education classrooms with the same performance that students without disabilities had. A majority of the teachers were not actively involved in planning access for these students.

In district assessments, both the IDEA and the NCLB acts require alternative assessments for students, such as SSCDs, who cannot participate with accommodations. Browder, Spooner, Ahlgrim-Delzell, Flowers, Algozzine, and Karvonen(2003) conducted a study focusing on five curricular attitudes in six states, such as developmental, functional, social inclusion, self-determination, and academic attitudes. They found that SSCDs might focus on functional skills in the context of general-education curriculum class activity. This indicates that educators should try to modify the curriculum for these students by adhering to state standards as much as possible, and that they should also try to base curriculum on the students' needs and abilities. This study also found that there was a strong connection among all six states that used primarily academic tasks as indicators in determining mathematics and reading levels for SSCDs. It is necessary to try to teach those basic academic skills that SSCDs will need throughout their lifetimes, as for jobs requiring basic reading and mathematics skills. Courtade, Spooner, Browder, and Jimenze (2012, p. 5) offer a succinctly stated reason for preferring an academic curriculum: "Increased academic competence adds to the options students with severe disabilities will have as adults for jobs (e.g., jobs require mathematics)". However, this should mean teaching basic mathematics skills that are valuable for SSCDs rather than complex mathematics skills.

Despite the argument among researchers about the appropriate curriculum for students with severe disabilities, they agree that the transition services and outcomes are disappointing for these students. Courtade, Spooner, Browder, and Jimenez (2012, p. 4) indicate that "Despite efforts to focus on transition, and to bridge the gap between school and adult

life for students with disabilities, unemployment for persons with severe disabilities has been found to be over 60%". In general, students with disabilities tend to be enrolled in remedial courses more than mathematics and English courses, as compared with those students without disabilities, and they also tend to get lower scores on the American Scholastic Aptitude Test (SAT) than those without disabilities. Additionally, young adults with disabilities who have already registered in postsecondary education are less likely to complete a bachelor's degree, which is reflected in an unemployment rate of 11%, compared to 4% for those without disabilities (National Center on Education Statistics, 1999, p. 7). Consequently, secondary and postsecondary transition services are very important for young adults with disabilities, needs that they will have throughout their lifetimes.

Spooner, Dymond, Smith, and Kennedy (2006) observed that one important approach that has helped with accessing a general curriculum, self-determination and Universal Design for Learning, or UDL, has been the use of peer tutors or buddies. It was very useful for teachers to know that peer tutors or buddies play important roles helping SSCDs to obtain several skills that they will need in their lives. Students without disabilities could teach students with severe disabilities many skills, such as "greeting the teacher, asking and answering the question, and going to class and taking a seat when the bell rings in general-education classroom" (Collins, 2007, p. 166). Students without disabilities will also assist students with severe disabilities to gain interactive skills in different activities, such as clubs, lunch, and shopping.

Another important study, conducted in Ireland by Ware, Robertson, Butler, and O'Donnell (2012), investigated factors that facilitated access to a general-education curriculum for students with moderate, severe, and profound intellectual disabilities. A review of 39 case studies of students with disabilities conducted in mainstream schools found that students with mild disabilities were the most likely to gain access to a general curriculum, with a success rate of 85%, whilst students with moderate, severe, and profound disabilities had trouble accessing the general-education curriculum. All the teachers and parents believed that the social aspects

of the general-education curriculum were the primary reason for including these students with disabilities. The review also found that the factors of appropriate training and time for collaboration played a significant role in access for these students to general-education classrooms.

A study by Karvonen, Flowers, and Wakeman(2013) also examined access to general-education curricula for students with significant intellectual disabilities; the authors surveyed 644 teachers from nine US states. The results of this study suggested some policies and practices that would successfully serve students with Significant Intellectual Disabilities (SID) participating in general-education classrooms.

Each approach to curricula has benefits and expectations for students with severe disabilities. It is necessary to consider these benefits and expectations in order to develop an effective curriculum for young children with severe disabilities. More importantly, Carter and Kennedy (2006, p. 284) point out that “students with severe disabilities should not only participate more fully in general-education classes, but they must also receive the supports, instruction, and opportunities needed to meaningfully access the general curriculum”. According to Carter and Kennedy (2006), modifications to general-education lessons are essential. They found that it was very important for each teacher to know that some lessons in the general-education classroom could be modified to be suitable for SSCDs, so that it was unnecessary to have alternate lessons for them. From this point of view, it was very important in teachers’ preparation to provide them with knowledge and skills that they could use with children with severe disabilities. This meant that these students would benefit from these modifications in the lessons because they would learn some academic skills that they needed to use in their lives. For example, Collins (2007, p. 167) cites a case in which “a third-grade student worked on using items that were hot or cold whilst other students worked on Fahrenheit and Celsius within the context of a science unit on temperature”.

The Purpose of the Study

This study demonstrates the current issue for students with intellectual and significant disabilities, which is the Standards-based curriculum

or academic curriculum. The purpose of this study was to investigate whether or not the appropriate curriculum for these students was the academic curriculum or a functional curriculum and to examine significant differences among gender, educational qualifications, educational institutions, teaching experience, training courses, and type of disabilities in teachers' perceptions towards academic and functional curricula. There was disagreement among several studies; such as (Ayres et al., 2011; Courtade et al., 2012) about the more beneficial curriculum for students with intellectual and significant disabilities. However, recently there has been a tendency in these studies to focus on standards-based curricula for these students, even though some studies have shown that a functional curriculum was beneficial for SSCDs because it considered their needs and abilities.

Research Questions

The research reported in the present study seeks to contribute to answer the following questions:

- To what extent have schools provided a general-education curriculum for students with intellectual and multiple disabilities?
- To what extent have schools provided a functional curriculum for students with intellectual and multiple disabilities?
- Are there any significant differences: between teachers' gender, educational qualifications, educational institutions, teaching experience, training courses, and types of student disabilities in teachers' perceptions towards academic and functional curricula for students with intellectual and multiple disabilities in schools (IMDs)?

Method

Participants

The participants in the present study were male and female special-education teachers in Riyadh, Saudi Arabia. There were 1026 special-education teachers (male and female), who taught 4004 students with intellectual disabilities, as well as 87 special-education teachers (male and female) who taught 404 students with multiple disabilities. A total of

1113 special-education teachers taught 4408 students with intellectual and multiple disabilities (IMDs) (Ministry of Education, 2016).

Date Collection and Procedures

A total of 810 surveys were distributed among 30 randomly selected public schools (elementary, middle, and secondary schools) and special institutions. The survey questionnaires were divided between boys' schools and girls' schools in different areas of Riyadh. Questionnaires were distributed in all areas to represent the population of the city. Permission to conduct this study was obtained from the Ministry of Education, and the participants provided informed consent before participation in the study. Then the questionnaires were distributed to all principals of schools with special-education programs so that they could be dispersed to all special-education teachers; the questionnaires were to be returned within 25 days. The completion of the questionnaires was voluntary. Overall, 209 special-education teachers successfully completed and returned the survey.

Instrument

The three-part survey was designed to determine the special-education teachers' perspectives towards academic and functional curricula for students in Saudi Arabia with significant intellectual or multiple disabilities. The instrument was based on content extrapolation, from the literature review, of academic and functional curricula for students with multiple disabilities. The first part of the three-part survey consisted of an explanation of the purpose of the study, guidelines for answering the questionnaire questions, and the rights of the respondents. The second part included six questions regarding the samples' demographic information: gender, educational qualifications, educational institutions, teaching experience, training courses, and the disability types of students taught. The third part pertained to the two dimensions of academic and functional curricula and consisted of a total of 30 statements. The participants were asked to rate their degree of agreement with the statements on a five-item Likert scale, (1 = strongly disagree, to 5 = strongly agree). The statements related to special-education teachers' perspectives on academic and

functional curricula for students with intellectual and significant or multiple disabilities. The questionnaire's content content of the questionnaire was sent to six professors in the Special Education Department at King Saud University in Riyadh for review and criticism. Their comments were considered in building the questionnaire.

Data Analysis

After the questionnaires were completed, they were collected and overall percentages were calculated to obtain demographic information and answers to the 30 survey items. The data were analysed to find the frequencies and percentages of the questionnaires answers, using the Statistical Package for the Social Sciences (SPSS) program. A one-way ANOVA was performed to assess the significant differences among the results of the study, variables related to educational qualifications, teaching experience, training courses, and type of student disabilities. Finally, an independent sample t-test was used, with teachers' gender and educational institution variables, to analyse differences between males and females and the special institute vs. integration program groups.

Results

Demographic Information

Table 1
Distribution of respondents by sample variables

Gender	Frequency	Percent
Male	173	82.8
Female	36	17.2
Educational qualifications	Frequency	Percent
Bachelor	134	64.1
Bachelor in Multiple Disabilities	4	1.9
Diploma	11	5.3
Masters	28	13.4
Doctorate	24	11.5
Other	8	3.8
Educational institution	Frequency	Percent

Table 1

Gender	Frequency	Percent
Special-education institute	105	50.2
Integration program	104	49.8
Amount of experience	Frequency	Percent
5 years or less	64	30.6
6-10 years	54	25.8
11 years and over	91	43.5
Training courses	Frequency	Percent
1-3 courses	182	87.1
4-7 courses	15	7.2
8 courses and more	12	5.7
Type of disability	Frequency	Percent
Intellectual disability	124	59.3
Intellectual and physical disabilities	24	11.5
Intellectual and hearing disabilities	3	1.4
Intellectual and autism disabilities	50	23.9
Other	8	3.8

As shown in Table 1, the number of males totalled 173 teachers, representing approximately (82.8%) of the respondents, whilst the number of females totalled 36 teachers, representing approximately 17.2% of the respondents. According to the educational qualifications variable, the number of respondents whose educational qualifications was a bachelor's degree was 134, representing approximately 64.1% of the respondents, whilst the number of respondents with an educational qualifications of bachelor in multiple disabilities was four, representing approximately 1.9%. The number of respondents whose educational qualifications were was a diploma was 11, representing about 5.3%, whilst the number of respondents whose educational qualifications was a master's degree was 28, representing approximately 13.4%. The number of respondents whose educational qualifications was a PhD was 24, representing approximately 11.5%. The number of respondents whose educational qualifications were 'other' was eight, representing approximately 3.8% of the respondents. Based on the educational institution type variable, the number of teachers

who were teaching in a special-education institute totalled 105, representing approximately 50.2% of the respondents, whilst the number of teachers who taught in integration programs, that is, programs in which students with disabilities were taught in an academic curriculum, was 104, representing approximately 49.8% of the respondents. For the experience in special education variable, the number of teachers who had experience in the field of special education for a period of 5 years or less was 64, representing approximately 30.6% of the respondents, whilst the number of teachers who had experience in the field of special education for a period of 6 to 10 years was 54, representing approximately 25.8% of the sample. The number of teachers who had special-education experience of 11 years and over was 91, representing approximately 43.5% of the respondents. For the training courses variable, the number of teachers who had completed one to three training courses in the field of special education totalled 182, representing approximately 87.1% of the respondents, whilst the number of teachers who had completed four to seven training courses totalled 15, representing approximately 7.2% of the respondents; the number of teachers who had completed eight or more training courses totalled 12, representing approximately 5.7% of the respondents. For the type of disabilities variable, the number of teachers who taught students with intellectual disabilities totalled 124, representing approximately 59.3% of the respondents, whilst the number of teachers who taught students with intellectual and physical disabilities was 24, representing approximately 11.5% of the respondents; the number who taught students with intellectual and hearing disabilities was three, representing approximately 1.4% of the respondents; and the number who taught students with intellectual and autism disabilities was 50, representing approximately 23.9% of the respondents; the number of teachers who taught students with other disabilities was eight, representing approximately 3.8% of the respondents.

Reliability

The reliability of the scale was measured using Cronbach's alpha coefficient, with a result of 0.93 for the whole scale. The reliability of the first factor of the scale, a general-education curriculum, was 0.93, and the

reliability of the second factor of the scale, a functional curriculum, was 0.95. Table 2 shows the reliability of the scale and its factors.

Table 2
Reliability measures

Factor	Number of items	Reliability
Whole scale	30	0.93
First factor: general-education curriculum	16	0.93
Second factor: functional curriculum	14	0.95

Validity

Pearson correlation coefficients were calculated for the whole scale, where the coefficient ranged from 0.85 to 0.82, the high and strong correlation coefficients at the 0.05 level: positive indicators of the validity of these statements and their relation to the whole scale. Table 3 shows the correlation coefficients for each dimension of the whole scale.

Table 3
Correlation coefficients of each dimension of the whole scale

Dimension	Correlation	Total score of scale
First dimension: the general-education curriculum	Correlation coefficient	0.85
	Significance	0.000
Second dimension: the functional curriculum	Correlation coefficient	0.82
	Significance	0.000

Results of the Three Research Questions

Research Question 1

To what extent do schools provide a general-education curriculum for students with IMDs?

To answer this question, the extent of a general-education curriculum can be assigned one of three values - weak, average, or high - based on the Likert scale used in the questionnaires. The five values from the questionnaire can be divided by 3, yielding a range of 1.3. This results in a weak level of 1 to 2.3, an average level of 2.4 to 3.7, and a high level

of 3.8 to 5. Regarding these levels, the statements for the first domain—the extent of the general-education curriculum that schools provided for students with IMDs—ranged between levels 2.23 and 3.32, or from weak to average. Statement number 10 from Table 4, ‘The content of general-education curriculum in integration programs has been modified to meet their needs of students with IMDs’, was in the top of domain with a mean of 3.32, which was located within the middle range, and a standard deviation of 1.11, which reflects variation among the teachers’ responses concerning the extent to which the curriculum met the students’ needs.

Statement 7, that ‘The application of appropriate teaching strategies; such as role playing for students with intellectual and multiple disabilities’, was the second one with a mean of 3.28, which was located within the mid-level range, and a standard deviation of 0.97; this also referred to the teachers’ responses, which agreed about the extent to which the curriculum has met students’ needs. Statement 4, that ‘The same content was delivered in teaching mathematics for students with intellectual and multiple disabilities as the content for their peers without disabilities’, was the last one with a mean of 2.23, which was located within the range of the weak level and had a standard deviation of 1.12. The teachers’ responses clearly varied concerning the extent to which the curriculum had been appropriate for students with IMDs. Table (4) illustrates this:

Table 4
Means, standard deviations, and ranks of the items for the first domain

Number	Statement	Mean	SD	Rank
1	The content of the general-education curriculum is designed for students with IMDs.	2.45	1.13	12
2	The content in teaching reading for students with IMDs was delivered in the same way as content for their peers without disabilities	2.37	1.11	15
3	The content in teaching writing for students with IMDs was delivered in the same way as content for their peers without disabilities.	2.44	1.05	13
4	The content in teaching mathematics for students with IMDs was delivered in the same way as content for their peers without disabilities.	2.23	1.12	16

Table 4

Number	Statement	Mean	SD	Rank
5	The content in teaching science for students with IMDs was delivered in the same way as content for their peers without disabilities.	2.43	1.03	14
6	There is a focus on problem-solving skills in teaching for students with IMDs to help them gain access to the general-education curriculum.	2.73	1.11	9
7	Appropriate teaching strategies, such as role playing, were applied for students with IMDs.	3.28	0.97	2
8	Individual educational programs (IEPs) were prepared for students with intellectual disabilities and multiple disabilities within the scope of the general-education curriculum.	2.58	1.09	11
9	The content of the general-education curriculum in integration programs has been adapted to meet the needs of students with IMDs.	3.07	1.17	4
10	The content of the general-education curriculum in integration programs has been modified to meet the needs of students with IMDs.	3.32	1.11	1
11	Peer tutoring strategies are applied in teaching general-education curriculum content to students with IMDs.	2.94	1.04	7
12	The Universal Design of Learning (UDL) was implemented in teaching general-education curriculum content for students with IMDs.	2.81	0.99	8
13	Cooperative learning strategies have been applied in teaching general-education curriculum content for students with IMDs.	2.99	1.02	5
14	There is collaboration with the general-education teachers in teaching general-education curriculum content to students with IMDs.	2.73	1.20	10
15	Alternative assessments are used in teaching general-education curriculum content to students with IMDs.	2.99	1.10	6
16	There is collaboration with parents in teaching general-education curriculum content for students with IMDs.	3.08	1.18	3
	First domain: The full range of the general-education curriculum was provided for students with IMDs.	45.80	12.33	

For the first domain, the schools provided students with IMDs the full extent of the general-education curriculum, which consisted of 16 items that had been identified at three levels (weak, average, and high). Since 64 was located between the lowest value (16) that could be obtained by teachers, and the highest value (80) the value 64 could be divided by the three levels, reaching 21.3. Here the weak level was between 16 and 37.3, whilst the average level was between 37.4 and 58.7, and the high level was between 58.8 and 80. Based on these levels, the average for providing a general-education curriculum in schools for students with IMDs was 45.80, which was located within the average range, whilst the standard deviation was 12.33; this referred to the varying responses by the teachers concerning the provision of the general-education curriculum.

Research Question 2

To what extent do the schools provide a functional curriculum for students with IMDs?

To answer this question, the extent of provision of a functional curriculum was also determined according to the three levels of weak, average, and high, based on the lowest item of 1 and the highest item of 5 of the 1-5 Likert scale. Regarding these levels, the statements for the second domain are as follows: the extent of the functional curriculum that schools provided for students with IMDs ranged between levels of 3.54 and 4.3, which was between mid-level and high level. Statement 18, 'The functional curriculum focuses on independent living skills for students with IMDs', was in the top domain with a mean of 4.03, which was located within the high range, and a standard deviation of 0.82; this referred to teachers' significant agreement on how to provide this curriculum in public schools.

Statement 19, 'A functional curriculum focusses on daily living skills for students with IMDs', was the second one with a mean of 4.03, which was also located within the high range, and a standard deviation of 0.84; this referred to the teachers' agreement about the extent to which an adequate curriculum was provided in public schools. Statement 23, 'A functional curriculum focuses on self-determination skills for students

with intellectual and multiple disabilities', was the last one with a mean of 3.54, located within the mid-level range, and a standard deviation of 0.93; this reflected the teachers' agreement about the extent to which an adequate curriculum was provided in the schools. This is shown in Table 5.

Table 5
Means, standard deviations, and ranks of the items for the second domain

Number	Statement	Mean	SD	Rank
17	A functional curriculum meets the needs of students with IMDs.	3.93	0.85	7
18	A functional curriculum focuses on independent living skills for students with IMDs.	4.03	0.82	1
19	A functional curriculum focuses on daily living skills for students with IMDs.	4.03	0.84	2
20	A functional curriculum focuses on social skills for students with IMDs.	3.94	0.92	6
21	A functional curriculum focuses on communication skills for students with IMDs.	3.96	0.84	5
22	A functional curriculum focuses on self-help skills for students with IMDs.	4.00	0.87	3
23	A functional curriculum focuses on self-determination skills for students with IMDs.	3.54	0.93	14
24	A functional curriculum focuses on appropriate behaviour skills for students with IMDs.	4.00	0.75	4
25	Appropriate educational environments are provided for teaching functional curriculum skills to students with IMDs.	3.88	1.05	9
26	Community-based instruction is applied in teaching functional curriculum skills to students with IMDs.	3.66	0.86	12
27	A functional curriculum focuses on recreational and motor skills for students with IMDs.	3.69	0.87	11
28	A functional curriculum focuses on self-protection and personal safety skills for students with IMDs.	3.92	0.88	8
29	There is collaboration with other community agencies in teaching a functional curriculum to students with IMDs.	3.62	1.07	13

Table 5

Number	Statement	Mean	SD	Rank
30	There is collaboration with parents in teaching a functional curriculum to students with IMDs.	3.71	1.03	10
	Second domain: The full range of functional curriculum was provided for students with IMDs	54.68	11.14	

For the second domain, the schools provide a full-range functional curriculum for students with IMDs, which consisted of 14 items identified at weak, average, and high levels. Since 56 was located between the lowest value (14) that could be obtained by the teachers in this domain and the highest value (70) the value 56 could be divided by the three levels, yielding 18.6. Here the weak level was between 14 and 32.6; whilst the average level was between 32.6 and 51.3, and the high level was between 51.3 and 70. Based on these levels, the average for providing a functional curriculum in schools for students with IMDs was 54.68, which was located within the average range, whilst the total standard deviation was 11.14; this reflected the varying responses by the teachers concerning the extent of providing a functional curriculum in the schools.

Research Question 3

Are there any significant differences between teachers' gender, educational qualifications, educational institutions, teaching experience, training courses, and types of student disabilities in teachers' perceptions towards academic and functional curricula for students with IMDs?

For the gender variable, an independent sample t-test was performed to find differences between the teachers' responses by gender concerning the general and functional curricula. The results are shown in Table 6.

Table 6
T-test results regarding teachers' perceptions by gender

Curriculum	Gender	N	Mean	SD	T	P
General-education curriculum	male	173	46.77	12.14	2.52	0.012*
	female	36	41.14	12.32		
Functional curriculum	male	173	55.19	11.39	1.45	0.146
	female	36	52.22	9.57		

As Table 6 shows, the responses of teachers by gender concerning a general-education curriculum showed that there was significant difference between the mean scores providing the general curriculum, where $t = 2.52$, $p = 0.012$ for the male sample with a mean of 46.77. For the responses of teachers by gender concerning a functional curriculum, there were no statistically significant differences between the mean scores concerning a functional curriculum, where $t = 1.45$, $p = 0.146$.

For the educational qualifications variable, a one-way ANOVA was performed to find differences between the teachers' responses by educational qualifications (bachelor, bachelor in multiple disabilities, diploma, masters, doctorate, other) concerning the general-education and functional curricula. The results are shown in Table 7.

Table 7
Results of a one-way ANOVA by teachers' educational qualifications

Curriculum	Source	Sum of squares	DF	MS	F	P
General-education curriculum	Between	499.37	5	99.87	0.65	0.661
	Within	31116.18	203	153.28		
	Total	31615.56	208			
Functional curriculum	Between	1570.81	5	314.16	2.63	0.025*
	Within	24242.70	203	119.42		
	Total	25813.52	208			

As Table 7 shows, the responses of teachers by educational qualification (bachelor, bachelor in multiple disabilities, diploma, masters, doctorate, other) concerning the general-education curriculum showed that there were

no statistically significant differences between the mean scores concerning the general curriculum at the 0.05 level, where $f(5, 203) = 0.65$, $p = 0.661$. For the responses of teachers by educational qualifications concerning a functional curriculum, there were differences at the 0.05 level between the mean scores concerning a functional curriculum, where $f(5, 203) = 2.63$, $p = 0.025$. By referring to the results of multi-dimensional comparisons of a Tukey HSD test, which showed the differences between variable levels of educational qualifications, it became clear that these differences were between the qualified PhD holders and those with other qualifications. This is shown in Table 8.

Table 8

Results of a Tukey HSDtest regarding teachers' educational qualifications

Curriculum	Bachelor	Bachelor in Multiple Disabilities	Diploma	Masters	Doctorate
Bachelor in Multiple Disabilities	-2.810				
Diploma	-0.923	1.886			
Masters	-0.417	2.393	.506		
Doctorate	-4.518	-1.708	-3.595	-4.101	
Other	11.440	14.250	12.364	11.857	-15.958-*

For the teaching experience variable, a one-way ANOVA was performed to find differences between the teachers' responses by teaching experience (5 years or fewer, 6 to 10 years, and 11 years or more) concerning the general-education and functional curricula. The results are shown in Table 9.

Table 9

Results of a one-way ANOVA regarding teachers' teaching experience

Curriculum	Sources	Sum of squares	DF	MS	F	P
General-education curriculum	Between	77.568	2	38.78	0.25	0.776
	Within	31537.99	206	153.09		
	Total	31615.56	208			

Table 4

Curriculum	Sources	Sum of squares	DF	MS	F	P
Functional curriculum	Between	594.31	2	297.16	2.42	0.091
	Within	25219.20	206	122.42		
	Total	25813.52	208			

As can be seen from Table 9, the responses of teachers by teaching experience (five years or fewer, six to 10 years, and 11 years or more) concerning the general-education curriculum showed that there were no differences at the 0.05 level between the mean scores concerning the general-education curriculum, where $f(2, 206) = 0.25$, $p = 0.776$. For the responses of teachers by teaching experience concerning a functional curriculum, there were no differences at the 0.05 level between the mean scores concerning a functional curriculum, where $f(5, 206) = 2.42$, $p = 0.091$.

For the educational institution variable, an independent samples t-test was performed to find differences between the teachers' responses by educational institution type (special-education institute, integration programs) concerning the general and functional curricula. The results are shown in Table 10.

Table 10

T-test results foreducational institution type

Curriculum	Educational institution	N	Mean	SD	T	P
General-education curriculum	Special-education institutes	105	46.52	11.27	0.85	0.394
	Integration programs	104	45.07	13.32		
Functional curriculum	Special-education institutes	105	55.47	10.34	1.02	0.306
	Integration programs	104	53.88	11.88		

It can be seen from Table 10 that the responses of teachers by educational institution type (special-education institute, integration program) in providing the general-education curriculum showed no statistically significant differences between the mean scores concerning the general

curriculum, where $t = .85$, $p = 0.394$. For the responses of teachers by educational institution type concerning a functional curriculum there were also no statistically significant differences between the mean scores providing functional curriculum, where $t = 1.02$, $p = 0.306$.

For the training courses variable, a one-way ANOVA was performed to find differences between the teachers' responses by training courses (one to three courses, four to seven courses, and eight courses or more) concerning the general-education and functional curricula. The results are shown in Table 11.

Table 11
Results of a one-way ANOVA regarding training courses.

Curriculum	Sources	Sum of squares	DF	MS	F	P
General-education curriculum	Between	540.347	2	270.17	1.79	0.169
	Within	31075.21	206	150.85		
	Total	31615.56	208			
Functional curriculum	Between	72.96	2	36.48	0.29	0.747
	Within	25740.56	206	124.95		
	Total	25813.52	208			

As can be seen from Table 11, the responses of teachers by number of training courses (one to three courses, four to seven courses, and eight courses or more) concerning the general-education curriculum showed that there were no differences at the 0.05 level between the mean scores concerning the general-education curriculum, where $f(2, 206) = 1.79$, $p = 0.169$. For the responses of teachers by number of training courses concerning a functional curriculum, there were no differences at the 0.05 level between the mean scores concerning a functional curriculum, where $f(2, 206) = 0.29$, $p = 0.747$.

For the type of disabilities variable, a one-way ANOVA was performed to find differences between the teachers' responses by training courses (intellectual disability, intellectual and physical disabilities, intellectual and hearing disabilities, intellectual and autism disabilities, and other) concerning the general-education and functional curricula. The results are shown in Table 12.

Table 12
Results of a one-way ANOVA regarding type of disabilities

Curriculum	Sources	Sum of squares	DF	MS	F	P
General-education curriculum	Between	442.03	4	110.50	0.72	0.577
	Within	31173.52	204	152.81		
	Total	31615.56	208			
Functional curriculum	Between	210.48	4	52.62	0.41	0.795
	Within	25603.03	204	125.50		
	Total	25813.52	208			

It can be seen from Table 12 that the responses of teachers by type of disability (intellectual disability, intellectual and physical disabilities, intellectual and hearing disabilities, intellectual and autism disabilities, and other) concerning the general-education curriculum showed no differences at the 0.05 level between the mean scores concerning the general-education curriculum, where $f(2, 204) = 0.72$, $p = 0.577$. For the responses of teachers by type of disability concerning a functional curriculum, there were also no differences at the 0.05 level between the mean scores concerning a functional curriculum, where $f(2, 204) = 0.41$, $p = 0.795$.

Discussion

The overall results of this study for special-education teachers responding to the survey questionnaires indicate that the extent of the general-education curriculum that was provided for students with IMDs ranged from level 2.23 to 3.32, that is, between weak and average levels, and the extent of the functional curriculum provided for students with IMDs ranged from level 3.54 to 4.3, that is, between average and high levels. This means that there was variation among participants' responses towards the academic and functional curriculum provided for students with IMDs.

The findings for the first domain of this study, the academic curriculum, are supported by such studies as (Ayres et al., 2011; Ayres et al., 2012; Agran et al., 2002; Karvonen et al., 2013; and Kleinert et al., 2015). These studies focussed on a functional curriculum rather than an academic curriculum

for students with significant IMDs and indicated that most of these students were unable to be taught in general-education classrooms: the studies agree with the current study's results for providing an academic curriculum. This suggests that it was useless to provide an academic curriculum for students with IMDs. Nevertheless, it must be recalled that Bouck (2012) disagreed with the current study's results and discussed focussing on functional as well as core course content, which indicates a trend linking the goal of IEPs to the general academic curriculum. Another important study, Dymond et al. (2006), explored the belief of most high school teachers that it was possible for students with significant intellectual disabilities to access a general-education curriculum, contrary to the present study's findings. Overall, the findings of this domain indicated a weak to average level of provision of an academic curriculum, so it is important to address obstacles in offering this curriculum to students with IMDs.

The results of the second domain of this study, the functional curriculum, indicate that provision of this kind of the curriculum ranged from average to high levels. These results disagreed with those of several studies, such as (Browder et al., 2003; Courtade et al., 2012; Spooner et al., 2006; Browder et al., 2006; and Dymond et al., 2006). These studies stressed the importance of providing an academic curriculum for this population that would help them engage later in society, getting jobs, and living independently. Courtade et al. (2012) maintained that academic competence would help students with significant or severe disabilities to get jobs. Because some work requires skills in mathematics, it was important to provide an academic curriculum for these students. Nevertheless, several studies supported the present study's findings; such as Ayres et al. (2011), Ayres et al. (2012), Karvonen et al. (2013), Kleinert et al. (2015), and Ware et al. (2012). These studies indicate that it is important to implement a functional curriculum for students with significant and multiple disabilities and emphasize the critical role of these skills in helping students with disabilities to engage in community life.

The present study found significant differences regarding providing the general curriculum where male educators were concerned. The study included more male special-education teachers than female teachers, so

this discrepancy might account for the differences that occurred. There were also significant differences according to educational qualifications regarding support for providing a functional curriculum. These differences occurred between those who held a PhD and teachers with other qualifications; this result was unexpected, since differences were anticipated between the PhD or other degrees, on the one hand, and the bachelor's degree in multiple disabilities, on the other, due to the small number of participants who held this degree. There were no statistically significant differences between the academic and functional curriculum domains regarding educational institutions, experience, training courses, and type of disability of students taught. This finding appears to be at odds with previous studies such as Dymond et al. (2006), which indicated various responses by special and general-education teachers concerning whether students with significant disabilities should be taught in general or self-contained placements. Ware et al. (2012) discussed the important role of training courses for special-education teachers in helping these students access general-education classrooms.

Conclusion

One limitation of the ongoing study was found. The survey questionnaires were distributed only in the Saudi Arabian capital city, Riyadh, so the findings of this study might not represent the entire population of special-education teachers throughout Saudi Arabia. Further research, and distribution of the surveys to teachers, in the other cities is needed to avoid this limitation. Based on the findings of the current study, the practical implications must be considered. Special-education teachers should improve their knowledge of effectively implementing access to the general-education curriculum for students with IMDs. They should have training courses covering access to a general-education curriculum. These training courses will help them teach students with IMDs to participate successfully in general classrooms. Another implication is that special-education teachers need sufficient knowledge of the effective practices that are frequently used to assist students with IMDs to access and be involved with peers without disabilities in general-education classrooms.

The major educational issue for students with intellectual and multiple disabilities is the question of whether they are taught using an academic or a functional curriculum. Previous writings on this issue, based largely in the US, have emphasized that the choice of curriculum has critical consequences for how these students will have a foundation for living and engaging successfully in community life (Carter & Kennedy, 2006; Collins, 2007). This study has expanded the list of countries studied regarding this issue, by looking at the extent to which academic and functional curricula are provided for students with these disabilities in the city of Riyadh, Saudi Arabia. It has also provided novel data by examining details of the use of academic and functional criteria and the extent to which the needs of the students are met by each type of curriculum. It was found that provision of an academic curriculum in schools ranged from weak to average levels, while provision of a functional curriculum ranged from average to high levels.

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