

Preferred Learning Styles among Students with Learning Disabilities

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Abstract

Students with learning disabilities (LD) can benefit more in school contexts when they are allowed to learn according to their preferred learning style. The purpose of this study was to identify preferred learning styles in 10th-grade students with LD and to determine whether these styles differ according to gender and Grade Point Average (GPA). A quantitative design through questionnaires and personal interviews were applied, 184 students completed self-report questionnaires for defining their learning style, and were interviewed for LD diagnosis. Results revealed that 45 students of them were at risk of having LD, and that kinesthetic and auditory learning styles were the most preferred styles among them, and these styles were correlated to gender between males and females, and correlated to GPA as students with higher achievement prefer kinesthetic and auditory learning styles respectively. The presence of LD managed to predict the preferred learning style according to gender and GPA, as males with LD preferring the auditory learning style managed to have better GPA compared to other students with LD, while females with LD who preferred kinesthetic learning style managed to have a better GPA compared to other females with LD. Findings were discussed according to the current educational practices adopted by teachers in schools compared to desired practices that should be compatible with preferred learning styles.

Keywords: learning styles, learning disabilities, learning preferences, teaching strategies, VAK Learning Styles.

1. Introduction

Students with learning disabilities (LD) are increasingly facing a variety of academic challenges during their attempts to achieve properly in their schools; these challenges include but not limited by: short attention span, poor memory, difficulty following directions, inability to discriminate between/among letters, numerals, or sounds, poor reading and/or writing ability, eye-hand coordination problems; poorly coordinated, difficulties with sequencing, and/or disorganization and other sensory difficulties (Maki & Adams, 2020). Therefore, psychologists and teachers were concerned about how to help those students to have better opportunities to use their potentials for better academic achievement (Aparna & Mahto, 2018). These efforts came as a response to an assumption that students with LD might be able to learn in different ways compared to their peers without LD, and as a result, a need emerged for modified teaching approaches and learning means that might be appropriate to the needs of those students (Maki & Adams, 2018). Many studies investigated learning as a human activity that takes place in different situations, in which individuals acquire and process information, and memorizes them to be later transformed into knowledge and skills that affect their behaviors (Moreau & Waldie, 2016).

Despite the enormous emphasis on instructional practices applied in educational contexts in which students should gain knowledge, the issue of whether those students are learning in the way they prefer is still questionable. Learning arrangements changed from teacher-centered to student-centered approaches, and this changed the traditional question of “*What to Teach*” to “*How to Learn*”, and what is the most important now is the acknowledgment that individuals learn in different ways or styles (Willingham et al., 2015).

Learning styles are perceived by many educators as a comprehensive concept that covers many of the theories of learning and associated practices in schools, with a wide consensus that curricula and related classroom practices should take into account such differences in students' preferred patterns of learning (Cimermanová, 2018). Attention to learning styles came as a result of insufficient understanding of human learning mechanisms that need to be a subject for research, and whenever we have a sufficient understanding of learning mechanisms and preferred learning styles by students, teachers will not need to guess best practices for teaching those students (Becirovic, 2020). However, this match between the learners' characteristics and best practices in teaching has never been achieved, and the absence of such matching is partly explained by the lack of a fully agreed theoretical framework for the interpretation of human learning (Green & Sammons, 2014).

According to many psychologists, learning styles come as a result of interaction between cognitive, emotional, environmental factors, and the learners' past experiences (Lake et al., 2017). Based on this assumption, every student is a different learner, and teachers must understand the differences in students' learning styles so that they can implement best practices in their daily teaching activities (Landrum & McDuffie, 2010). Hence, it has been assumed that the preferred learning style affects a student's behavior and their ability to learn, and adopting these styles by instructors are approved to be a vital factor to enhance the efficiency of learning outcomes (Zacharis, 2011). Thus, understanding differences in learning

styles among students would help the teacher to adopt approaches of teaching that meet those diverse needs, on the other hand, ignoring such diversity in learning needs might lead those students to be underachievers, and as a result, educators tend to label them as having learning disabilities (Moreau & Waldie, 2016).

The current practices in Jordan are by providing intervention to students with LD upon diagnosing them during the second up to fourth grade to be provided with remedial services up to sixth grade. Despite that, those students accomplish sixth-grade requirements and move to subsequent classes with no remedial intervention, at least in state schools. In this case, the label LD is no longer used, and those students are left to adjust with academic demands, and they must learn how to adapt to their academic challenges using alternative learning styles. What we aimed from implementing this study was to identify how students with LD adapt to academic demands by adopting learning styles to achieve success in classes, and what learning styles they prefer to keep moving in classes as their peers without LD. The study seeks to achieve the following research objectives:

- i) Assess the prevalence of LD among a sample of 10th-grade students, and determine whether the presence of LD differ according to gender and Grade Point Average (GPA).
- ii) Identify preferred learning styles, and determine whether they differ according to gender and (GPA).
- iii) Identify the relationship between LD and preferred learning styles.
- iv) Determine whether LD can predict preferred learning styles according to gender and (GPA).

2. Literature Review

Learning styles may play a crucial role in helping students with LD to compensate defects in their abilities to learn and to achieve properly at schools (Yazıcı, 2017; Zacharis, 2011), and the question was whether adopting preferred learning styles among students with LD in instructional contexts would reduce the negative effects of having LD? According to (Emejidio & Gepila, 2020; Delic & Becirovic, 2018; Klitmøller, 2015; Reid et al., 2013), an individual might have his/her preferred learning style due to a variety of factors, such as cultural and educational background and personal characteristics. And for students with LD, the more these learning styles are employed in learning, the more improved academic achievement they will gain.

2.1 Learning Styles

Learning styles model was introduced by many psychologists such as Fernald, Gillingham, Keller, Orton, Stillman, and Montessori in the 1920s, to determine learning styles preferred and frequently used by learners (Fleming, 2001; Klement, 2014). Learning styles might be viewed as the way an individual interacts with environmental stimuli and experiences; it is how an individual perceives and processes information received from the environment

(Truong, 2016).

(Fleming, 2014), identified three major learning styles; Visual, Auditory, and Kinesthetic, and learners could be classified into one of these categories or have a combination model of these styles. Visual learners who learn by seeing and looking for diagrams, videos, flowcharts, symbols, colors, pictures, graphs, and animation as preferred methods to learn, and tend to sit in front chairs in the classroom to avoid visual distortion. The auditory learners prefer lecturer's voices, verbal explanations, tape recordings, presentations, group discussions and stories as preferred methods to learn, those learners tend to focus more on listening to what others say and get the implicit meaning of learning through tune, rhythm and speech pace. Finally, kinesthetic learners who prefer real experience learning situations, concrete examples, case studies, field trips, laboratory experiments, facts, hand manipulation skills, and thus find it hard to sit for long periods in learning situations. (Becirovic, 2020) indicated that by understanding students' preferred learning styles, we can recognize and use appropriate teaching methods, which as a result may improve the quality of their learning abilities.

In some discussions, researchers assumed that LD could be partially explained by the learning style that the student benefits most from and cannot use to learn (Alghasham, 2012; Moreau and Waldie, 2016; & Silver et al. 2008). According to (Williams et al., 2016), the logic in this assumption is that students with LD already have disorders in their verbal and auditory skills, and as a result, their abilities to learn are limited in particular ways. (Klitmøller, 2015) define learning styles as “perceptual preferences” and therefore, those students might benefit from modified verbal and auditory teaching techniques that simulate their perceptual abilities, these means could be explained as preferred learning styles for those students.

2.2 Learning Disabilities

Individuals with Disabilities Education Act (IDEA) identified LD as a “disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations” (Pullen, 2016).

This term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia, but does not include any problems that are primarily resulting from visual, hearing, or motor disabilities, or intellectual disability, or emotional disturbance, or environmental or economic disadvantage (Williams et al. 2016). Hereby, students with LD have normal IQ (Gresham & Vellutino, 2010), but there is a gap between their intellectual capabilities and their academic achievement compared to their peers in age (Moll et al., 2014, Wissinger & Ciullo, 2018).

(Maki & Adams, 2020) referred to learning disabilities (LD) as a neurodevelopmental disorder that leads to functional disorders in learning and processing information. These disorders resulting from central nervous dysfunction can interfere with basic learning skills such as reading, writing, mathematics, spoken and written language skills, visual processing, and visual-spatial. These disorders might also interfere with higher mental skills such as

organizational skills, time planning, abstract thinking, long and short-term memory, and attention (Fuchs et al., 2004; Kranzler et al., 2016). LD can also affect an individual's life in non-academic situations; as relationships with family, friends, and work (Silver et al. 2008).

Despite having normal intellectual abilities; students with LD are facing a gap between expected intellectual performance and their actual academic achievement (Mazher, 2018). Although this discrepancy might appear in reading, writing, and mathematics skills during the early years in school, as those are essential academic skills that must be used in the learning process, other students might be misdiagnosed with LD because they are diagnosed with other emotional and behavioral disturbances, and therefore they do not receive any remedial services and still placed in regular classrooms (Aparna & Mahto, 2018).

Different types of LD were identified with a different contribution in affecting the students' ability to learn. (Fuchs et al., 2004) referred to an agreement between educators that students with LD have common symptoms as follows:

- a. Auditory Processing Disorders: in which the ability to process sounds is highly affected, students with such conditions have phonological awareness dysfunction and can't differentiate sounds, even when the quality of the sounds such as pitch, tone, and intensity is enough to be heard by others without LD.
- b. Dyscalculia: a condition that affects a students' ability to understand numbers and learn math facts, students with such conditions may have a poor understanding of math symbols, trouble memorizing and organizing numbers, and difficulty figuring out time and counting.
- c. Dysgraphia: a condition that affects students' handwriting ability and fine motor skills, it also includes unreadable handwriting, the asymmetric spacing between letters and words, weak dictation, and the difficulty of coordinating between writing and thinking at the same time.
- d. Dyslexia: a condition that affects reading and language processing skills, and appear as problems identifying speech sounds and how they relate to letters and words (decoding), and this resulting in problems in reading fluency, remembering, writing, dictation, and sometimes speech.
- e. Non-Verbal LD: this disorder is usually characterized by a significant deficit in verbal and motor skills, visual-spatial, and social skills. An individual with this type of disorder has difficulty interpreting non-verbal cues such as facial expressions or body language besides to lack of coordinating skills.
- f. Visual Perceptual Motor Deficit: a disorder that affects the ability to process and understand the information gathered through vision, and resulting in frequent loss of words during reading, difficulties in paper cutting, hard grasping of the pen, poor eye/hand coordination.

In this regard, (Malacapay, 2019) proposed that students with LD tend to learn through ways that can help them to overcome these disorders, this means that students with auditory processing disorders might tend to avoid learning through auditory means and prefer to learn through visual or kinesthetic means. And as a result, (Lehman, 2019) conclude that whenever students with LD become aware of their difficulties, they probably would be more able to adopt unique learning strategies to meet their academic demands. According to (Heiman, 2006), the

approach in which students with LD adjust their learning strategies is influenced by the learning style they prefer, which is different from one student to another, and differ from those preferred by students without LD. Deciding the adequate learning style might help the students to acquire confidence in their ability to learn, and whenever they find appropriate ways to understand and process information, they can shape their independent learning techniques to overcome LD (McLaughlin et al., 2015).

3. Methodology

3.1 Research Design

To achieve the objectives of the current study, a quantitative approach through questionnaire method was used for data collection. VAK and Washington State Learning Disabilities Screening were adopted as the conceptual framework of the study.

3.2 Participants

The population of the study consisted of tenth-grade students at state schools in the governorate of Ajloun northern Jordan in the second semester of the academic year 2018/2019, these schools are providing special education services that are supervised by the second author. Official records obtained showed that the total of those students were 2801 enrolled in 62, 1390 were males enrolled in 25 schools, and 1411 were females enrolled in 37 schools, those students were divided through 107 classes, all students were almost in same age; sixteen years old.

Five schools for males and another five for females were chosen randomly, and a total of 200 scales (7.14% of the population) were distributed and recollected, upon primary checking, 16 scales (8%) were excluded for incomplete answering, and only (184) scales were accepted, 89 scales were for males (48.4%), and 95 scales were for females (51.6%) with an overall response rate of (92%), those students participated on voluntary and anonymous base, representing the sample of the study with a (6.5%) of the study population.

3.3 Instruments

i) VAK Learning Styles Self-Assessment Questionnaire (Chislett, and Chapman, 2005):

A self-rating scale consisted of 30 items that reflect the way individual generally behave in daily life situations, each item has three alternatives as possible answers, each answer representing one of the three major learning styles (the alternative A refers to visual learning style, B refers to auditory learning style, and C refers to kinesthetic learning style), there are no right or wrong answers. In responding procedures, the respondent is asked to read each item and check one of the alternatives, and the most chosen alternative represents the preferred learning style.

The questionnaire was translated to Arabic, and internal consistency was extracted, correlations for each item with total degree on scale ranged from 0.63 to 0.91, average inter-item correlation was 0.78 (Cronbach's $\alpha = 0.81$). These indicators of reliability and

validity coefficients were considered satisfactory for using the scale for the current study.

ii) Washington State Learning Disabilities Screening (Payne, 1997):

A short screening tool consisted of 13 questions with limited (*Yes/No*) answers that should be asked orally to the student through a short friendly interview. According to implementing directions, these questions should be presented to the student on the base that they are intended to identify school and life experiences to improve the academic program in the school. The scoring procedures for this tool by counting the number of *Yes* responses in the four sections and multiply by the factor indicated in each section and finally adding the subtotals from the four sections, and if the total score is 12 or more, the respondent is considered at risk of having LD, and an additional specialized diagnosis is recommended.

3.4 Procedures

School administrations were contacted, and students' participating approval was obtained through a letter for their parents. Those students received the VAK in their classes and later were interviewed individually by the researchers for the Washington State Learning Disabilities Screening.

3.5 Statistical Analysis

To achieve the study objectives, all responses were coded, entered and analyzed using version 22 of (SPSS), and then expressed through frequencies and percentages. The Chi-Square Tests for independent samples were used as the main statistical technique.

4. Results

This study aimed to identify preferred learning styles among a sample of 10th-grade students with LD, in what follows, the results of this objective and related sub-objectives set for this study are presented.

4.1 Findings Related to the First Objective of the Research

The first objective of the research was to assess the prevalence of LD among a sample of 10th-grade students and to determine whether the presence of LD differs according to gender and GPA. Students' responses on Washington State Learning Disabilities Screening were extracted, and students' GPAs were divided to three intervals according to range equation, this procedure gave three intervals and descriptions for GPAs as follows: 50 – 66 (Average), 67 – 82 (Good), and 83 or above (Excellent), these intervals were analyzed using the Chi-Square test as shown in Table 1.

Table 1. Prevalence of LD according to Gender and (GPA)

Sample	Gende		Total	Pearson Chi-Square	Df	GPA			Total	Pearson Chi-Square	Df
	M	F				Av.	Go.	Ex.			
Students with LD	M	F				Av.	Go.	Ex.			
Count	32	13	45	12.336**	1	15	21	9	45	31.872**	2
% within LD group	71.1	28.9				33.3	46.7	20.0			

** p < 0.000%

Table 1 shows that 45 students were at risk of having LD (3.22%) of the population, 32 of them were males (71.1%), and those were (2.3%) of the males in the population, and 13 were females (28.9), (0.9%) of the females in the population. The table also shows that gender was correlated to LD; males were at risk of being diagnosed with LD are more than females, $X^2(1, N = 45) 12.336, p < 0.000$. For the second part of the objective regarding achievement expressed by GPA and its relation to LD, table 1 also shows that 21 students with LD (46.7%) have (Good) GPA, 15 (33.3%) students with (Average) GPA, and finally 9 students (20.0%) with (Excellent) GPA, with an overall average of GPA (73.43), GPA was correlated to LD, $X^2(2, N = 45) 31.872, p < 0.000$.

4.2 Findings related to the Second Objective of the Research

The second objective of the research was to identify preferred learning styles and to determine whether these styles differ in students with LD according to gender and GPA. The responses of all students on VAK were extracted according to the scoring procedures and were analyzed using the Chi-Square test as shown in Table 2 for gender and in Table 3 for (GPA).

Table 2. Preferred Learning Styles According to Gender

Sample	Description	Learning style			Pearson Chi-Square	Df
		Visual	Auditory	Kinesthetic		
Male	Count	5	14	13	8.729*	2
	% within Male with LD	15.6	43.8	40.6		
	% within Sample	11.1	31.1	28.9		
Female	Count	3	4	6		
	% within Female with LD	23.0	30.8	46.2		
	% within Sample	6.7	8.9	13.3		
Total	Count	8	18	19		
	% within Sample	17.8	40.0	42.2		

* p < 0.05%

Table 2 shows that 19 students with LD (42.2%) prefer kinesthetic learning style; 13 of them were males and 6 were females, 18 students (40.0%) prefer auditory learning style; 14 of them were males and 4 were females, and only 8 students prefer visual learning style; 5 of them were males and 3 were females, $X^2(2, N = 45) 8.729, p < 0.05$).

Table 3. Preferred Learning Styles according to GPA

GPA	Group	Learning style			Pearson Chi-Square	Df
		Students with LD	Visual	Auditory		
Average	Count		4	5	6	10.478*
	% within LD		8.9	11.1	13.3	
Good	Count		2	9	10	
	% within LD		4.4	20.0	22.2	
Excellent	Count		2	4	3	
	% within LD		4.4	8.9	6.8	
Total for Students with LD	Count		8	18	19	
	% within LD		17.8	40.0	42.2	

* $p < 0.05\%$

For the second part of the objective regarding achievement and its relation to preferred learning style, table 3 shows results regarding students with LD in which 10 students with (Good) GPA (22.2%), 6 students with (Average) GPA (13.3%), and 3 students with (Excellent) GPA (6.8%) prefer kinesthetic learning style with a total percentage of (42.2%) of students with LD group. The results in table 3 show also that 9 students with (Good) GPA (20.0%), 5 students with (Average) GPA (11.1%), and 4 students with (Excellent) GPA (8.9%) prefer auditory learning style with a total percentage of (40.0%) of the group. Finally, 4 students with (Average) GPA (8.9%), 2 students with (Good) and (Excellent) GPA (4.4%), prefer visual learning style with a total percentage of (17.8%) of the group, $X^2(2, N = 45) 10.478, p < 0.05$).

4.3 Findings related to the Third Objective of the Research

The third objective of the research was to identify the relationship between the presences of LD and preferred learning styles, results are shown in Table 4.

Table 4. Relationship between LD and Preferred Learning Styles

Learning styles	Count	% LD Sample	Pearson Chi-Square	Df
Visual	8	17.8	7.359*	2
Auditory	18	40.0		
Kinesthetic	19	42.2		

* $p < 0.05\%$

Table 4 shows that 19 students with LD (42.2%) prefer kinesthetic learning style;

18 students were with LD (40.0%) prefer auditory learning style; and only 8 students were with LD (17.8%) prefer visual learning style, $X^2(2, N = 45) 7.359, p < 0.05$.

4.4 Findings related to the Fourth Objective of the Research

The fourth objective of the research was to determine whether LD can predict preferred learning styles, the responses of students with LD on VAK Learning Styles Questionnaire and Washington State Learning Disabilities Screening were analyzed using the Chi-Square test according to gender and (GPA) as shown in Table 5.

Table 5. Predicting Relationship between LD and Preferred Learning Styles according to Gender and (GPA)

Students with LD	GPA	Learning Style			Pearson Chi-Square	Df
		Visual	Auditory	Kinesthetic		
		Count (% of GPA Group)			7.508*	2
Male	Average	1 (11.2)	4 (44.4)	4 (44.4)		
	Good	2 (11.8)	8 (47.1)	7 (41.1)		
	Excellent	2 (33.3)	2 (33.3)	2 (33.3)		
Total		5	14	13		
Female	Average	3 (50.0)	1 (16.7)	2 (33.3)		
	Good	0 (0.0)	1 (25.0)	3 (75.0)		
	Excellent	0 (0.0)	2 (66.7)	1 (33.3)		
Total		3	4	6		

* $p < 0.05\%$

Table 5 shows that 19 students (42.2%) diagnosed with LD prefer kinesthetic learning style; 13 were males and 6 were females. In this group, 4 males with (Average) GPA, 7 with (Good) GPA and 2 with (Excellent) GPA, and 2 females with (Average) GPA, 3 with (Good) GPA and 1 with (Excellent) GPA prefer kinesthetic learning style. The table also shows that 18 students (40.0%) diagnosed with LD prefer auditory learning style; 14 were males and 4 were females. In this group, 4 males with (Average) GPA, 8 with (Good) GPA and 2 with (Excellent) GPA, and 1 female with (Average) GPA, 1 with (Good) GPA and 2 with (Excellent) GPA prefer auditory learning style. Finally, the table shows that only 8 students (17.8%) diagnosed with LD prefer visual learning style; 5 were males and 3 were females. In this group, 1 male with (Average) GPA, 2 with (Good) GPA and 2 with (Excellent) GPA, and only 3 females with (Average) GPA prefer visual learning style, $X^2(2, N = 45) 7.508, p < 0.05$.

5. Discussion

This study aimed to identify the prevalence of learning disabilities among a sample of 10th-grade students and their preferred learning styles; the results showed that 45 students were at risk of being diagnosed with LD with a percentage of (24.5%) of the respondents, and (3.22%) of the total population. The *Washington State Learning Disabilities Screening* used in the current study aimed to define students at risk of having LD, and for the current study, the high score in this tool was considered as an indicator of having LD. This procedure was consistent with the current practices in the schools where this study took place, in which decreased academic achievement with the absence of any other intellectual disability are perceived as trustful indicators of having LD. This percent of students with LD was close to the accepted worldwide percent (Williams et al., 2016) and similar to students at risk of having LD (Wissinger & Ciullo, 2018).

Results also showed that males were at high risk of being diagnosed with LD more than females; and these come to be consistent with findings from researches that explain why males are more likely to be identified as having LD than females (Maki & Adams, 2020). Many researchers proposed that the differences between males and females have to do with biological vulnerability; which means that males are more likely for being affected with LD than females (Moll et al., 2014; Pullen, 2016). Males tend to get more negative attention at school from educators because they externalize more symptoms related to LD as hyperactivity, impulsivity and physical aggression than females who often have different internalize symptoms such as anxiety, depression, daydreaming, and low self-esteem (Maki & Adams, 2018; Silver et al., 2008).

Another factor that was correlated to LD was the achievement expressed by GPA, in which most of the students with LD have a (Good) GPA. Returning to the raw data of the study, students with LD in (Average) group were 15, with an average GPA of 59.93. Students in (Good) group were 21, with an average GPA of 75.66, whereas students in (Excellent) group were 9, with an average GPA of 90.77; this means that the sum of students in the first two groups was 36 (80%) of the sample with an average GPA of 67.79 which is a poor academic performance and more closer to the (Average) GPA, and this result is consistent with findings of previous research about the low academic achievement of students with LD (Aparna & Mahto, 2018; Maki & Adams, 2020; Wissinger & Ciullo, 2018).

In most of the current educational practices in regular schools where this study took place, teachers focus more on visual teaching approaches, while kinesthetic and auditory learning styles are the preferred learning styles for most the participants in the study respectively. This discrepancy between practiced teaching style by teachers and preferred ones by students in light of GPA achieved by those students might be explained as hard efforts by those students to compensate the presence of LD and related symptoms in order to avoid stigmatization of being marked as disabled learners (Moreau and Waldie, 2016). In a class of 25 up to 30 students as the case in many classes in Jordanian schools, to listen and even to be less active participant in the learning process in the class, and later to double your efforts at home to accomplish your homework, might be the best approach to avoid being labeled as disabled

learner. This result was consistent with the findings of (Becirovic, 2020; Cimermanová, 2018; Emejidio & Gepila, 2020; Lehman, 2019; Yazıcı, 2017), and this findings was support with better GPA achieved by students who prefer kinesthetic and auditory learning styles. In general, the more the learners are involved in the learning process, and more sensory inputs were utilized, the more they gain knowledge through learning situations (Yazıcı, 2017).

The fact that students with LD do not prefer the visual style in learning and receiving information in classroom contexts may be due to the visual perceptual/visual motor deficits which are related to LD, and these resulting in deficiencies in understanding visual information, and maintain attended with teachers (Mazher, 2018). Such conditions are familiar in students with LD and manifest themselves in non-verbal learning difficulties (Kranzler et al., 2016; McLaughlin et al., 2015) and this make them less preferring for the visual style of learning.

Such results appeared in (Alghasham, 2012; Heiman, 2006; and Zacharis, 2011) and raised questions about the efficacy of current educational practices regarding the learning styles used in schools, in which educators mostly preferred to teach according to visual learning style, whereas most of the students with high academic achievement prefer to learn and acquire knowledge by kinesthetic and auditory learning styles. According to the predicting relationship between the presence of LD and the preferred learning styles, a pattern of preference of learning styles according to GPA was clear in which kinesthetic style was the preferred learning style in students having LD with a (Good) GPA, and later comes the auditory learning style.

6. Conclusion

The findings of the study showed that kinesthetic pattern is the most preferred learning style among students with LD, and the auditory learning style comes next in preference, unlike the visual learning style that is widely used by teachers and educators in schools but still less preferred by students. Adopting kinesthetic and auditory learning style by students with LD managed to compensate and later diminish the negative effects of LD, and this was reflected in the (Good) academic GPA achieved by those students, saying this and taking in consideration that – according to the students’ responses and schools records – they never received any additional or remedial programs through special education services.

The emphasis given to learning outcomes expressed by GPA seems to be more important than the learning process itself; maybe this emphasis on achieving high or at least acceptable GPA is the only common thing between teachers and students with LD. The teachers’ goal at the end is to accomplish the curricula, and the students are looking to achieve a good GPA, neither the teachers nor the students were concern about the best practices to teach or to learn. The preferred learning styles within students were not in the interest of educators, even when those students are in need to double their efforts to achieve the same GPA they can achieve with fewer efforts if teachers managed to figure out the preferred learning style for those students and redesign teaching methods and classroom activities to be appropriate for each

student in individual base according to his/her preferences. Teachers should be aware to include all learning styles in the teaching process and to make sure that what is taught through auditory means should be written in vision-able material, and finally must be practiced kinesthetically by students.

7. Practical Implications, Future Projections and Research Limitations

Students in schools have diverse backgrounds, and they were subjected to a wide array of socialization styles with different resources of experiences, and this will affect their preferred learning styles. Therefore, teachers should be aware of such individual differences in learning styles, and the teaching strategies they use to deliver the curriculum should be compatible with these styles. Teachers are ethically obligated to use a wide and diverse array of teaching methods, so students become active learners.

The more learning methods are used in schools to simulate the prevailing learning styles, the greater the opportunity for those students to benefit from educational contexts, especially for students with learning disabilities who face real challenges in adapting to teaching practices in traditional schools.

Teachers should be directed to integrate all three learning styles in teaching methods, and they should motivate students to be active participants in learning process through teamwork, group discussions, problem solving activities, laboratory experiments, students' clubs, linkage theoretical knowledge with daily life situations, and activating competitions that simulate different types of learning styles such as (cultural, artistic, sports and scientific).

8. Study Limitations

The participants in the study were 10th grad students enrolled in state schools in the governorate of Ajloun northern Jordan during the first semester of the academic year 2018/2019; therefore, results could be generalized in the context of the sample only. The design of the current study represents correlational explanations not causal ones for the presence of LD and preferring specific learning styles.

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