

# Teachers' knowledge and skills to identify learning disabilities in Morocco

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## Abstract

Despite the adoption of an inclusive approach ensuring equal and fair opportunities for the schooling of students with SLDWL by the Moroccan Ministry of Education; it is clear that the data on teaching practices in schools is not well known. Based upon this reality, and using a mixed sequential explanatory methodology, the present study aims to assess teachers' knowledge and representations of SLDWL in general and identifying the methods and tools employed in particular. One hundred and twenty-six teachers in 12 administrative subdivisions of the Moroccan kingdom responded to the questionnaires distributed online. For the collection of qualitative data, targeted semi-structured interviews were conducted with four participants working in professions related to the supervision of teachers. The present study revealed a lack of training, both initial and in-service, on the SLDWL. The conclusion that may be drawn is that awareness-raising activities on these disorders seem to be insufficient to enable teachers to acquire the necessary skills to identify, accompany students with SLDWL, and equip them with sufficient knowledge to intervene effectively with these students.

**Keywords:** Specific learning disabilities, training, teachers, tracking, tracking tools.

## INTRODUCTION

The Moroccan Ministry of Education has officially launched the National Inclusive Education Program, which aims to guarantee students with disabilities access to schooling in the ordinary environment. Among the categories targeted by this program are students with specific learning disabilities. These disorders result in dysfunctions in one or more of the neurological processes involved in the acquisition and development of oral language, reading, writing, mathematics, memory, execution functions, and motor skills (Lyon et al. 2003). They are difficult to identify due to the similarity of their manifestations with other deficiencies, which makes their identification very complex and often late with considerable

repercussions on the educational, social, and professional future of individuals. With an early identification, these consequences could be mitigated. According to the scientific journal, the predictive signs of these disorders can be observed in the classroom. Therefore, the teacher plays a key role in identifying and guiding students with SLDWL (Labonté, 2011). However, despite the recognition of SLDWL as a handicap by our educational system, and the development of a student support guide representing SLDWL for teachers, the working conditions of the latter as well as the means available to them to identify and take students with SLDWL, remain unknown. Many researchers agree that the inclusion of pupils with special needs in ordinary schools cannot be achieved without the implementation of training

and support programs for teachers (Avramides, Norwich, 2002). These statements are supported and validated by studies that attest a rather positive, change in the attitudes of future teachers who have benefited from awareness or training on the inclusion of students with SLDWL in regular schools (Edward M. Sosu, Peter Mtika & Laura Colucci-Gray 2010). While others postulate that training not only tends to change teachers' beliefs towards students with these disorders, but it also contributes to the development of solutions to improve school enrolment (Guibert, P. & Le Corre, N. 2015). In addition to the psychometric validation of our measuring instruments, the objective of this study is to assess teachers' knowledge of SLDWL, draw up an inventory of the training courses, and identify their needs for identification tools adapted in the Moroccan context.

## METHODOLOGY

To answer these questions, the methodology adopted was based on a questionnaire and a targeted semi-structured interview.

### PARTICIPANTS

The target population consists of 126 teachers working in different sectors of education, including the public, private and foreign mission sectors, in this case French schools. To draw up a more global inventory of knowledge, the state of training and the availability of tools for identifying SLDWL, it seemed appropriate to include all teachers regardless of the level and subjects taught. The scope of the study covered the 12 Moroccan regions. Among the participants in our study, 6 people were recruited at the direct request of the researcher; this choice was motivated by the fact that 2 of them hold a master's degree in cognitive neuroscience so they have knowledge about SLDWL, while the remaining 4 work in a school that adopts an inclusive approach. To ensure the emergence of more data, we conducted targeted semi-structured interviews with four people. The participants were selected according to two criteria: whether they have knowledge about SLDWL in the Moroccan context and whether they engage in a professional activity closely linked to the supervision of teachers.

## MATERIALS AND METHODS

To collect the data, a self-administered closed ended questionnaire was distributed electronically. For the seventeen teachers, we were able to provide them with the questionnaires through the school management, in paper format. An interview guide presenting the themes related to our objectives has been developed. First, a review of the literature on the assessment of teachers' knowledge of SLDWL and the availability of identification tools allowed us to select a measurement scale of 19 items. Subsequently, this scale was submitted to experts in the field of teaching and remediation of SLDWL such as teacher trainers, education inspectors, neuropsychologists, and speech therapists. Since this scale was intended for, an Arab- French-speaking population verification by a linguist of the comprehensibility of the items was necessary. The opinion of these experts allowed us to discard 9 items. 10 items were selected. All these items were divided into 2 dimensions: Knowledge and teacher training on SLDWL (five items); 2. Ability to identify students at risk using validated and standardized SLDWL identification tools (5 items). Our instrument was complemented by the socio-demographic and occupational characteristics of the participants in this study (age, gender, place of work, class taught, and training institution).

## STATISTICAL METHODOLOGY

In our study, the process of validating our scale was based on two steps. Initially, we calculated the reliability of the entire questionnaire and the two dimensions of the scale by the Cronbach alpha. Exploratory factor analyses were then conducted. The statistical analyses were done by the statistical package for the social sciences (SPSS) trial version. The data collected were therefore subject to exploratory analyses to determine the dimensionality of the scale. Principal component factor analysis (PCA) is the most effective method for synthesizing information and discovering the underlying structure of a concept since it is a method of analyzing multivariate data that allows to simultaneously explore the relationships that exist between several variables studied. In our study, we used the Kayser Meyer Olkin test (KMO). A KMO index of less than 0.5 is

unacceptable, 0.5 is poor, more than 0.6 is acceptable, 0.7 is average, 0.8 is meritorious and 0.9 is excellent (Stewart, 1981). Bartlett's sphericity test was used to assess the possible effectiveness of the ACP studied. For a factor analysis to be feasible, the Bartlett test must be significant  $p < 0.05$  (Yves et al, 2003). Similarly, we calculated the Cronbach alpha to check the reliability and homogeneity of the items on the measurement scale. An alpha between 0.6 and 0.8 is acceptable for an exploratory study (Bland, Altman, 1997).

## 1. Psychometric property of the questionnaire

### 1.1 Internal reliability of questionnaire items

The Cronbach alpha value of all items was 0.7, which attested the homogeneity between items (table).

Table.1: Cronbach alpha values of all items and questionnaire dimensions

	Alpha de Cronbach	Items
Item Sets	0.7	15

### 1.2 Factor analysis

To conduct a factor analysis of the questionnaire, we took into consideration the value of the KMO index and the Bartlett sphericity test. The KMO index was  $0.6 > 0.5$  in this study, which is an acceptable value for factor analysis. Therefore, the Bartlett sphericity test is highly significant. To study the factor structure of the data collected, we opted for a principal component analysis (PCA). The latter was carried out with varimax rotation on all the items of the questionnaire. This analysis made it possible to retain two factors that explain 60% of the total variance. The first factor composed of 5 items (item 1, item 2, item 3, item 4, item 5) explains 29% of the inertia and the second factor composed of 5 items (item 6, items 7, item 8, item 9, item 10) explains 31% of the observed variance. The homogeneity of the items allowed us to name the first factor "State of knowledge of teachers on SLDWL" and the second factor "Ability of teachers to Identify and have availability of Tracking Tools." To test the reliability of these new dimensions of the questionnaire, Cronbach alpha was used which demonstrated a very high homogeneity between the items (table).

Table.2: Cronbach's alpha of new questionnaire dimensions

Dimension	Items	Cronbach's alpha
State of Knowledge of SLDWL by the teacher	item 1, item 2, item 3, item 4, item 5	0.72
Teachers' ability to Spot and have Tracking Tools	item 6, items 7, item 8, item 9, item 10	0.76

## RESULTS

### Socio-demographic and professional profile of the population

The population of our study consisted of 126 teachers and four teacher supervisors. With an average age of around  $45.05 \pm 9.5$  years. We noted a clear predominance of the female sex with 76 women or 61% and 50 men or 39%, the sex ratio (F/M)=1.4 ( $P\text{-value} \leq 0.005$ ). Concerning the years of seniority, the average was of  $20.23 \pm 9.89$ . Regarding the distribution of teachers according to the 12 Moroccan

administrative subdivisions, all the regions of the kingdom were represented with an overrepresentation of Casablanca and Rabat, with 21% who work in the rural environment and 79% who work in urban areas. Regarding the level of study, 52 teachers hold a bachelor's degree which constitutes 41% of the participants in the survey, 36% of the participants were CREMF Laureates ( $n = 45$ ), the remaining 23% ( $n = 29$ ) either have a master's and Doctorate degree. Regarding the level taught, 74% of participants teach at the primary level, 11% at the secondary level, 7% at the high school level

and 8% at the higher level. According to the subjects taught, 29% (n=37) teach scientific subjects (mathematics, science, physics,

chemistry) and 71% (n=89) teach literary subjects (Arabic, French, History, Geography)

Table.3: *Occupational and Demographic Parameters of Our Population*

Variables	Number	Percentage
<b>Subjects taught streams</b>		
• Scientific	37	29%
• Literary	89	71 %
<b>Grade level taught</b>		
• Primary	93	74%
• Secondary	14	11%
• High school	9	7%
• Academic	10	8%
<b>Last degree obtained</b>		
• License	52	41%
• CRMEF	45	36%
• Doctorate	6	5%
• Master	23	18%
<b>Exercise area</b>		
• Rural	55	21%
• Urban	107	79%
<b>Sex</b>		
• Masculine	49	39%
• Feminine	77	61%

#### State of knowledge on SLDWL

During our study, 33% (n=41) of the teachers surveyed said they had an idea about SLDWL (P-value $\leq$ 0.005). Regarding the definition of SLDWL, 74% (n=93) of the teachers thought that SLDWL are temporary academic difficulties that can be alleviated with pedagogical intervention. 21% of the teachers (n=27) referred to these disorders as a dysfunction of the central nervous system while 5% or (n=6) defined them as an intellectual disability. In addition, 43% of the participants (n= 52) explained that they have not received

any initial training on SLDWL, 54% (n= 68) have confirmed that they have benefited from awareness training programs and only 6% (n=6) said that their basic training program contained modules on SLDWL (P-value $\leq$ 0.005). On the other hand, 98% (n=103) expressed their desire to integrate a cycle of in-service training on SLDWL.

#### Ability to locate and availability of SLDWL tracking tools

According to the table, 96% (n = 121) of our population confirmed having had students with SLDWL in their classes, but only 37% stated

that they took part in the protocol of identification and care of these students ( $P$ -value $\leq 0.005$ ). Regarding the approaches implemented to identify students with suspicion of SLDWL, 66% based it on grades, 56% based

it on classroom observation, and 5% used validated identification tools. Most teachers believed that having identification tools at their disposal will significantly improve their teaching practices.

Table.4: *Distribution of responses for each item in dimension 1 (state of knowledge) and dimension 2 (identification and tracking tool)*

Item	Questions	Number			Percentage		
		Yes	Not	P	Yes n(%)	No n(%)	P
Dimension 1: Teachers' state of knowledge on SLDWL							
1	Do you have an idea about SLDWL	41	85	0,005***	33	67	0,005***
2	In your opinion, SLDWL refers to:						
	• Temporary Academic Difficulties	70	56	0,005***	56	44	
	• a malfunction of the central nervous system	27	99	0,005***	21	99	
	• a delay in school acquisitions	23	103	0,005***	16	84	
	• an intellectual disability	6	120		5	95	
3	Have you received any initial training on TSALAs?	6	120	0,005***	5	95	0,005***
4	Have you benefited from continuous training on SLDWL?	68	58	0,005***	54	46	0,005***
5	Would you be interested in joining a continuing education cycle on SLDWL?	123	3	0,005***	98	2	0,005***
Dimension 2: Teachers' Ability to Spot and Have Tracking Tools Available							
6	During your period of practice as a teacher, did you teach students with SLDWL?	121	5	0,005***	96	4	121
7	Have you been involved in the protocol for identifying and caring for students with SLDWL?	46	80	0,005***	37	63	46
8	The identification of TSSELS is done among others:						
	-by referring to the notes?	66	60	0,005***		52	48
	-by observation in class?	71	55	0,005***		56	44
	-by validated tracking tests?	10	116	0,005***		92	8

9	Do you have at your disposal a standardized and validated SLDWL tracking tool	10	116	0,005***	92	8
10	Will having a SLDWL tracking tool available improve your teaching practices?	124	2	0,005***	98	2

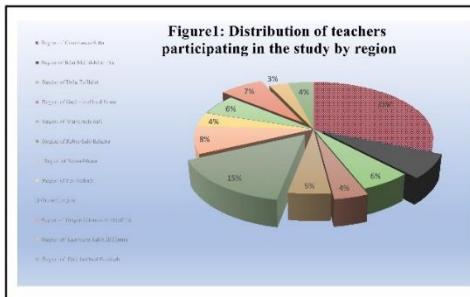
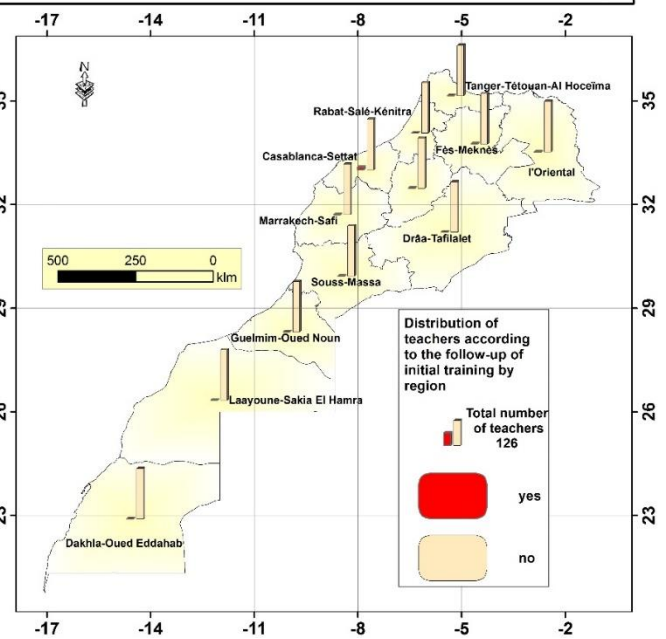
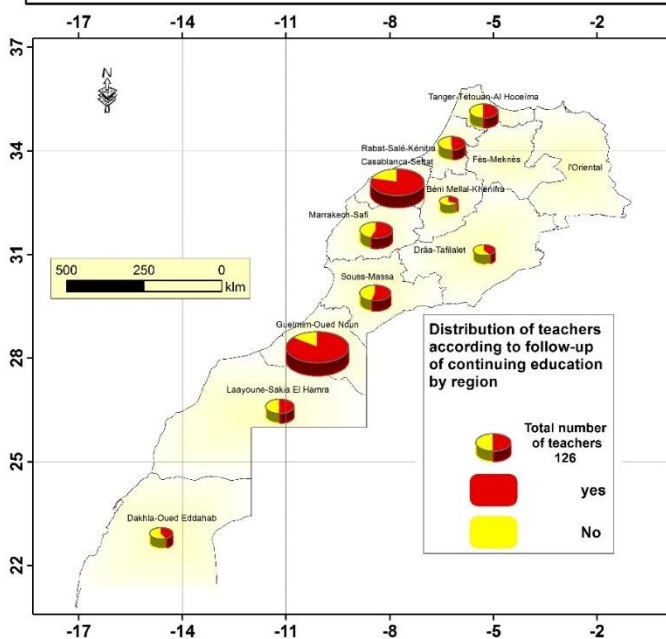


Table 1: Distribution of teachers according to follow-up of initial and continuing education by region

Region code	N (Teachers of Morocco)	This teacher of teachers according to the follow-up of initial training by region		This teacher of teachers according to follow-up of continuing education by region	
		Yes	No	Yes	No
1	Region of Casablanca-Settat	0	120	78	42
2	Region of Marrakech-Safi	0	126	37	89
3	Region of Fes-Meknes	0	120	33	87
4	Region of Tanger-Tétouan-Al Hoceïma	0	126	61	65
5	Region of Oriental	0	126	56	70
6	Region of Marrakech-Safi	0	126	37	89
7	Region of Fes-Meknes	0	120	33	87
8	Region of Tanger-Tétouan-Al Hoceïma	0	126	61	65
9	Region of Oriental	0	126	56	70
10	Region of Marrakech-Safi	0	126	37	89
11	Region of Laayoune-Sakia El Hamra	0	126	56	70
12	Region of Dakhla-Oued Eddahab	0	126	61	65



To highlight the factors influencing the state of knowledge of SLDWL among Moroccan teachers, we studied the effect of the following variables: initial training, awareness and previous experience teaching a student with

SLDWL. According to the calculation of the Odds Ratio, the risk factors on the state of knowledge of SLDWLs are initial and/ or continuing training (Odds Ratio = 7.4; 95% CI [1.3-103.4]; P-value=0.005), awareness (Odds Ratio= 7.29; 95% CI [2.4-18.3]; P-value=0.001).

Table.6: *Effect of initial and in-service training on the state of knowledge of children's learning disabilities among Moroccan teachers.*

Variables		No (n=85)	Yes (n=41)	X <sup>2</sup>	Odds Ratio	95% confidence interval
Initial training	Not	84	36	7.4***	11.67	[1.3-103.4]
	Yes	1	5			
Continuous Formation	Not	51	7	20.52***	7.29	[2.9-18.3]
	Yes	34	34			
Teaching students with SLDWL	Not	2	3	1.79	0.31	[0.05-1.93]
	Yes	83	38			

X<sup>2</sup>(Khi square or chi square);

\*\*\*: difference is highly significant between the two responses with the p-value value is lower by 0.005.

Regarding the age effect, we noted a negative correlation between the SLDWL knowledge score and a positive correlation regarding teachers' ability to identify SLDWL.

Table 7. : *Effect of age on the state of knowledge of children's learning disabilities among Moroccan teachers.*

P-value	
State of knowledge of Teachers on SLDWL	Teachers' ability to identify students with warning signs of SLDWL
<b>Age</b>	<b>-0,0005</b> <b>+0,0005</b>

Note: Dependent variables: state of knowledge of SLDWL with Moroccan teachers 1: No; 2: Yes

And Teachers' Ability to Identify Students with SLDWL Warning Signs: 1: No; 2: Yes

\*\*\*: Highly significant difference between the two responses with a lower p-value value of 0.005.

## DISCUSSION

The objective of this research is to explore teachers' knowledge of SLDWL, their skills in identifying SLDWL and the availability of tools to identify these disorders. 33% of teachers confirm to have an idea about SLDWL while

67% do not. 74% of the participants define these disorders as academic difficulties that require punctual pedagogical interventions, 5% think that the disorders are related to a mental disability, and 21% attribute these disorders to a dysfunction of the central nervous system. In this regard, only 21% of participants seem to be more or less informed about the origin of SLDWL. As for the state of teacher training surveyed, only 5% of our population have benefited from initial training and 54% from awareness raising while 43% have not benefited from any formation. To further elaborate, we referred to the calculation of the Odds Ratio (table) between the state of knowledge of the SLDWL and the state of initial and/or continuing training. With one (Odds Ratio= 7.4; P-value=0.005), the association between the two variables is well established especially since the interval of the 95% CI [1.3-103.4] does not include the value 1, making the Odds Ratio statistically significant. The same results found regarding the association between the awareness of SLDWL and state of knowledge, with one (Odds Ratio = 7.29; 95% CI [2.4-18.3]; P-value=0.001). Similarly, 96% of our population have taught a student with SLDWL, while 37% have taken part in the identification and care protocol. Regarding the identification methods, only 6 teachers have at their disposal validated tools for SLDWL identification. Through the analysis of teachers' a suspicion of SLDWL. Nevertheless, these interviewees affirm that the implementation of awareness-raising and capacity-building actions by the school management has motivated them to pursue

research in this field, and to gain knowledge and discover tools to identify students at risk.

responses, most participants appear to confuse between the signs of SLDWL and related signs of academic difficulties. At this level of analysis, we can ask the following question: To what extent does the analysis of the answers relating to the semi-directive interview can contribute to the explanation of the results of our quantitative study. The review of the targeted semi-structured interviews drew two main conclusions. The first conclusion comes from Moroccan supervisors. The latter stipulate that teachers who have followed their basic training in Morocco have never benefited from training on SLDWL neither as part of their initial training at the CRMEF (Regional Centers for Teaching and Training Professions) nor as part of in-service training. Nevertheless, as part of their awareness-raising actions, some associations working in the field of SLDWL periodically organize awareness-raising actions for teacher trainers, school directors and teachers. The latter in turn try to sensitize future teachers on the specific educational needs of these students. However, concerning the teachers' abilities to intervene with students with SLDWL at the end of these trainings, the interviewees confirm that the content was rather a summary awareness of the manifestations of these disorders, without allowing teachers to intervene effectively in terms of identification and orientation of students towards appropriate care by specialists. On the availability of the identification tools, the interviewees deny the provision to teachers of tools for identifying the warning signs of SLDWL likely to allow them an effective differentiation between SLDWL and DS. The second conclusion comes from the teaching professionals who supervise teachers who have completed their studies abroad. These supervisors argue that the teachers had received, as part of their basic training, modules on Disability in general and on SLDWL in particular. However, they add that the training focused only on theoretical knowledge, which is generally insufficient. The theoretical knowledge does not offer the teacher the necessary information that will enable them to adapt teaching practices for the benefit of pupils with special educational needs and to detect those children with

SLDWL and the identification of students with these disorders have always sparked debates between researchers and specialists working in this field. In addition, the similarity of the warning signs generated by SLDWL, and the learning difficulties makes the intervention with these students rather complex. In support of this, Hammill wonders how a teacher can have the necessary skills to identify, take charge of a person with SLDWL, without being informed and well trained on the nature of these disorders (Hammill, 1990 p. 75) in (Tremblay, 2010). On this basis, it can be argued that the contradictions raised in the teachers' statements concerning the knowledge and ability to identify students with SLDWL can be attributable to the fact that most of the interviewed teachers did not benefit from any training. In fact, the awareness exhibited by the 68% seems to be insufficient to allow teachers to better identify, help and refer to other specialists in order to ensure the appropriate care for these students. Our results go hand in hand with the literature in the sense that training is necessary to promote the enrolment of students with SLDWL in schools (Moothedath, Shari et Mysore Narasimha Vranda, 2015 ; Sharma, Umesh and Anthony Nuttal, 2016).

Based on our results, there is no relation between teaching a student with SLDWL and the state of knowledge of SLDWL. To be able to respond to the heterogeneity of learners, especially those with SLDWL, a teacher must benefit from sufficient training to identify the needs and abilities of each student. In addition to ensuring adapted interventions with students, this will help improve the teacher's professional practices and knowledge (Gombert et al. 2008), Dunand et Feuilladiou (2014). However, since SLDWL are difficult to identify and their manifestations are similar to learning difficulties and due to the lack of training and information on these disorders, the teacher will not be able to recognize them as such and he will assimilate them to academic difficulties or to a lack of motivation and seriousness on the part of the student. Thus, having a student with SLDWL in the classroom may not contribute to the improvement of the teachers' knowledge of SLDWL.

Regarding the age effect, we noted a negative correlation between the SLDWL state of knowledge score and the age of the teachers. In other words, the youngest teachers attest to a



higher state of oldest knowledge than the older teachers. These results can be due to the fact that awareness-raising actions have been organized in recent years by associations working in the field of SLDWL for the benefit of newly recruited teachers. This has contributed to the emergence of a state of consciousness among young teachers, even on SLDWL. It is also important to note that a positive correlation was found between the age and ability of teachers, the oldest, to identify students at risk. Thus, even if the teachers do not have a precise knowledge of SLDWL, they are indeed able to identify students with academic difficulties. As explained above, this paradox is the consequence of the misunderstanding that teachers have with regards to SLDWL and learning difficulties. With that said, since they are more experienced, teachers can identify the difficulties of their students without specifying these difficulties and assigning them to SLDWLs.

## CONCLUSION

Our study questioned the state of knowledge and training on SLDWL, the teachers' abilities to identify students at risk and the availability of identification tools in the Moroccan context. To address these issues, this study adopted a mixed method approach: a quantitative method using a questionnaire and a qualitative method based on a semi-structured interview to better understand the teachers' questionnaire answers. The results of the study revealed that due to the lack of initial training, teachers' knowledge with regards to specific learning disabilities is limited. Despite the efforts made by the association to raise awareness on SLDWL, teachers are yet to acquire sufficient skills to identify and help students with SLDWL. The study also found that while a significant percentage of teachers claimed to have identified students with SLDWL, only a minority had a validated tracking tool and therefore could spot students with suspicion of SLDWL. In addition, this study has asserted that without training, even the most experienced teachers are unable to identify and help students with SLDWL. Thus, different measures must be done to raise the awareness of the newly recruited teachers on these learning disorders.

The results of this study are of high value to researchers in the field of learning and disabilities, decision-makers and to parents and teachers. However, this study is by no means conclusive. Questionnaires are often regarded as self-reported data and one of their weaknesses is the subjectivity. To ensure the truthfulness of the responses of the participants, the questionnaires were followed by interviews. Future research ought to include open ended question in order to allow teachers to express themselves for a better exploration of the subject in study. Future research should interview teachers who have benefited from the awareness days on SLDWL as to assess the quality of the knowledge received at the end of these awareness-raising actions and collect feedback from teachers. In this regard, training programs must be created to meet the needs of the teachers and equip them with the necessary skills and tools on how to identify, deal with and help children with learning disabilities. In fact, setting up these training programs, specifically with the help of health professionals, will serve to inform teachers about the different aspects of SLDWL, their warning signs and the mechanisms they use to contribute to remediation.

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