



The Impact of a Training Program on the Development of Perceived Cognitive Competence among Students with Learning Disabilities: An Experimental Study

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Aims: This paper aims to examine the relationship between a training program designed for students with learning disabilities and their perceived competence. The research investigates the strong need for detecting the obstacles hindering Jordanian students, especially those at the early stages, who are continually require intensive care and attention.

It is obvious that students with different disabilities need to attain special training programs and individualized and adequate treatment. The first step in learning and participating in different activities is the cognitive competence of students which they receive from different sources.

Study Design: The study used a quasi-experimental design.

Place and Duration of Study: Ministry of Education in the Jerash District, in Jordan.

Methodology: The current research adopted a self-report instrument "Perceived Competence

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Scale for Children" [1] as the main tool. The study sample consisted of 26 fourth-grade students (13 male and 13 female) with learning disabilities who joined the resource rooms. The samples were distributed among eight schools. The instrument was modified by Sheikha to cope with the Jordanian environment and the unique societal traits. In order to achieve the research objectives and answer the research questions, the current research employed the analysis of covariance (ANCOVA) on the control group prior to the employment of the training program. This type of analysis was employed to test the DIFFERENCES in the students' with learning disabilities performance prior to the employment of the training program and in a later stage. Additionally the mean and the standard deviation were employed to detect variations between the experimental and the control group.

Results: The results showed that there were no statistically significant differences among the students with learning disabilities performance due to gender. The mean values also indicated that the students with learning disabilities cognitive competence signaled obvious differences in the performance of the students after conducting the training program on the experimental group.

Keywords: Cognitive competence; student with disabilities; perceived competence scale for children.

1. INTRODUCTION

Education is one of the main concerns in most countries tackled by many researchers and scholars to study the impacts, methods, approaches, treatment, etc. in the educational field from different perspectives and within different contexts. Students in the different school studying levels have dissimilar needs and requirements. The case of studying the students with special needs is even more complicated. Is it fair to provide the same education system for all students with and without disabilities? [2].

There is special emphasis on educational, social, and moral issues related to children with special needs who are being educated in regular schools. The physical presence of children with special needs in the classroom (physical integration) does not ensure a child's progress and development, unless functional and social integration are also provided. It is urgent that teachers and decision makers within the sector of education consider developing the dimensions of self-concept (academic, social, physical) while designing the curricula and setting up the educational provisions. In addition, the implementation of inclusion in the current practice requires that teachers become primarily responsible for educating all the children in the classroom [3].

Furthermore, the cognitive competence is the first step that motivates the students' participation in different activities, however providing this cognitive competence for students with disabilities is not an easy job [4]. Teachers should help their students to believe in themselves, and motivate them to do their best in their different subjects. The current research

attempts to investigate the perceived cognitive competence of a selected sample of students with learning disabilities by using a self-report instrument i.e. "Perceived Competence Scale for Children" [1]. In other words, the current study aims at identifying the impact of a training program on perceived cognitive competence of students with learning disabilities, as well as investigating if there are any differences in their perceived cognitive competence due to gender.

1.1 Review of Literature

1.1.1 Perceived competence

Perceived competence absorbs the attention of lots of researchers since it is considered the main factor that enhances the students' learning and participation in different classroom activities. Harter states that perceived competence is directly related to the motivation of participation [5]. The motivation arises when individuals engaged in different activities for pleasure, as they receive out the activity itself. That means that the extrinsic rewards are not the main issue [6]. Ryan and Deci [6] believed that the need to feel competent and self-determining lies essentially beneath motivated behaviors. They asserted that individuals are motivated to experience the internal rewards of feeling of competence and self-determination, and activities likely to yield such internal rewards become basically motivating. In sport activities it is believed that the activities are representative of such basic motivating. An important source of motivation for sport participation would appear to have the desire to experience the feeling of competence and self-determination. The same result can be applied on the other subjects of the educational field. Students who engage

themselves in different experiments in science or those who learn to solve mathematic questions are internally motivated, since they receive the confidence in solving different issues in their study according to their levels [4,7].

1.1.2 Cognitive competence

According to Piaget [8,9], the cognitive competence represents the cyclical processes of assimilation and accommodation, which points to people's ability to manipulate their personal experiences as well as to organize and adapt their thoughts to direct their behavior. Fry [10] also believes that the cognitive competence includes three interlinking and interdependent components: cognitive structures, cognitive processes, and overt behaviors. Among other components, "cognitive processes", such as meta cognition, cognitive styles of self-regulation, and cognitive skills of thinking, reasoning, analyzing problems and information processing, can affect one's "behaviors" like task performance, problem-solving, and decision-making, as well as "cognitive structures", such as self-schemas and goal orientation. It is concluded that, people are able to make a difference in their cognitive development and capability by manipulating their mental processes and cognitive styles, by using adequate thinking skills. On the other hand, cognitive competence is more than an ability to manipulate and strategize information, but an ability to internalize, self-regulate, and transfer these cognitive skills to produce knowledge and make sense of the surroundings [11,12].

1.1.2.1 Background of cognitive competence

Diverse inflectional factors control adolescents' cognitive competence, such as heredity, environmental stimuli, socioeconomic status, culture, and maturation [13]. Cognitive development and maturation, among other factors, have crucial influence. According to Piaget [8,9] individual cognitive competence become complicated all the way through four developmental stages according to their age. Children aged between 7 and 11 years are at the concrete operational stage. Their logical reasoning is developed which allows them to mentally arrange and compare things. Critical thinking starts to flourish as their thinking becomes de-centered and less egocentric and let them to consider others' perspectives and clarify one's thoughts [8,14]. These logical and critical thinking become advanced when they enter the formal operational stage (age 12 or above), since

they can think systematically, manipulate mental objects, test hypotheses, and draw conclusions based on reasoning. It means that developmental age and maturation are related to the development of cognitive competence. Furthermore, adolescents' cognitive competence is changing progressively through their active manipulation of the mental processes.

Meaningful social interaction is another factor helping adolescents excel cognitively. Vygotsky [11,12] believed that through conversation, collaboration, modeling, guidance, and encouragement, adolescents learn to improve the ways of their thinking such as: reasoning and solving problems from more competent peers and adults, and comparing to carry out the task alone. In addition, creative imagination and thinking happen to be more sophisticated during adolescence, when youngsters enthusiastically apply private speech to conceptualize their own methods of problem-solving from whatever they learnt from social models [15]. Empirical findings showed that students were cognitively advanced when they were able to internalize, self-regulate and transfer these cognitive skills, therefore, they can complete the tasks alone and without asking help from the others [16].

Socio-cultural contexts and settings, such as family, classroom, schools, and educational system, also relate to cognitive competence among adolescents. Thus, another critical antecedent of cognitive competence is whether there is "mediated learning experience" that give the opportunities for adolescents in two ways; the first way is to learn the thinking skills, as the second is to become aware of these thinking skills and processes which help them to excel in task performance, as well as to become more self-regulatory and self-efficacious in conveying the skills within wider contexts. Quite number of researches findings confirmed that structured programs, activities, scaffolding instructions and guidance, and social interactions are useful in helping children and adolescents to provide and convey these thinking skills. One of these researches is the Philosophy for Children Program in training critical thinking [17], while the other research is the Purdue Creative Thinking Program in training divergent thinking [18,19]. Furthermore, the de Bono Cognitive Research Trust Program for Creative Thinking (CoRT Program) in training lateral thinking and vertical thinking [20]. CoRT could facilitate the fluency, flexibility, and originality of thinking [21,22]. Mushrooming evidences also proved the potential of incorporating creative thinking in

classroom teaching for ordinary students [23,24] and outside classroom context for talented students [25,26] in order to transfer the skills to independent learning and problem-solving.

From the above, it can be concluded that students with disabilities, including students with learning disabilities need more than others to improve their cognitive competence. They have attention, perception, thinking, and memory deficit, which are considered the reasons for their learning disabilities. Thus, students with learning disabilities have low cognitive competence [27].

Reviewing the literature shows the variation on the influence of developmental and environmental factors on the perception of self-competence among children [28]. The mentioned variation can be seen when children presenting responses to some eager to hear. The age, cognitive development, gender of children can cause these variations. Trautner [29] worked on the influence of gender on perception of self-competence among preschool students. They found the significant influence of gender in this matter, although researchers such as [30,31] discovered that there is no influential role in regards to gender differences.

Children can learn to play the appropriate social gender roles since the early ages by having different opportunities such as; activities, reinforcement, and modeling [32-34]. Those behaviors have been supported at all level of socialization for noticeable gender suitability. The socialization can be included as family socialization, techniques and attitudes parental childrearing attitudes, parental behavior [35-37] and teachers' attitude and behavior [38,39]. As an example it can be refer to societies which traditionally has a positive support of boys for playing with cars and do rough and difficult task while girls should play with dolls and behave politely and kindly [40-42].

However, parents with genderless childrearing attitudes will receive genderless behavior from their children and result the higher self-concepts and peer acceptance [43-45]. The variance of the result in different studies can be referred to the variety of population and sample size as well as different cultural background.

1.2 Students with Disability

Reid and Valle [46] and Fosnot [47] analyzed real classroom transcripts, and identified a series of behaviors in which "knowing" that a student

has a label (any disability label) expect a teacher to search for specific shortage connected to that label and respond to the student in day-to-day classroom interactions as if the student truly possessed the expected characteristics. The teacher's as well as other students' behaviors make a condition that the student responds as students with learning disabilities. An ethnographic study by [48] is discussed as follows:

The scenario: Students are working in small groups to find out the relationship between an object's shape and whether or not it is floats. Kim asks Cynthia to prepare a list of the objects they has been tested before in the class tested, unfortunately, the magic marker doesn't work. Jay, a student labeled with a learning disability (LD), wants to try it. Carl, a classmate not in the group, says, "If she can't do it, you can't either." Jay said, "Shut up!"—but tries it by having a quick smile. The teacher, said "We don't talk like that in here" since she heard their conversation without noticing the smile. Carl comes back to his seat. Cynthia finds a new marker and records the objects tested earlier by writing their name, size, shape, and material. Jay tries to tell the girls that they are not doing the assignment: "Mrs. Bozek said for us to organize it by shape." "You're supposed to do shapes." "Do it by shape." No one reacts to his words. The teacher observes the students to see what they are doing, and then reminds them that test the objects by shape, "So, do all cylinders float or sink? What does the data say?" Jay comments to Kim, "See, I told ja." The teacher again says "We don't talk like that in here," and points to the door.

Collins [48] noted that, the teacher and students focus more on the interpersonal aspects of the task rather than its requirements. Jay is "set up" by his classmates, who interfered with/or ignore him. So, contributes by responding with "Shut up" and "I told ja." Therefore, the question is, "Where is the LD?"

"It is all over the classroom as an interactional possibility. Everyone stands in some relation to it. Everyone is part of the choreography that produces moments for its public appearance. LD is distributed across persons, across the moment, as part of the contextual work members do in the different scenes [49]. Neither [Jay], nor his disability, can be separated from the contexts in which they emerge [48].

As general educators, we use this example to point out that disability results not from an

individual's bodily, sensory, or cognitive difference, but from social interpretations of that difference. Disability is contextualized. It is not a worldwide fact or condition; it is performed. As a performance, its nature and meaning shift throughout time [50], according to cultures [51], and, in terms of our interests even if the dialog and classroom activities changes [52].

Moreover, disability does not happen for all students in the same way, even if they are labeled the same. "Students with disabilities may be Black, White, or Asian; poor, middle-class, or affluent; male or female; straight or gay; English-speaking or not; young or old; and each of these factors influence their life experiences, aptitudes, attitudes, interests, and so forth. The intersectionality of all personal and social characteristics determines how disability will be experienced" [49].

Thinking about disabilities as absolute categories of difference can cause problem since it emphasizes students' common deficits [53], as well as their uniqueness and competence. If teachers are to provide access to the general education curriculum, as the 1997 reauthorization of the Individuals with Disabilities Education Act of 1997 (IDEA) and the No Child Left Behind Act of 2001 (NCLB) authorization, they must recognize and build on all students' strengths, talents, and prior knowledge. Only through building on their strengths and acknowledging their experiences can teachers engage students in appropriately challenging classroom activities.

2. METHODOLOGY

The current study aimed to identify the relationship between a training program designed for students with learning disabilities and their perceived competence.

A self-report instrument was used as the main tool in the current study. The study sample consisted of 52 students (Approximately 10 years old) divided to two groups (experimental and control) as a purposive sample. Each of the experimental and the control group consisted of 26 fourth-grade students (13 male and 13 female) with learning disabilities who joined the resource rooms in the Ministry of Education in the Jerash District. The study sample was distributed among eight public schools. To achieve the study objectives and to answer the research questions, the researcher used the "Perceived Competence Scale for Children"

which developed by Harter [1]. The instrument was adapted by Sheikha [7] to cope with the Jordanian environment and the unique societal traits. The adapted instrument included 28 items. The authors of the adapted version of the scale found evidences of content and construct validity. Moreover, Cronbach's Alpha was 0.95 (Reliability). Approval from the owners to use the instrument in the current study was obtained. A discussion with the school management was held to arrange for a meeting with the students separately to clarify the current study objectives and to explain to them the purpose of the information, which was for scientific research. The current researcher explained to students with learning disabilities to answer the instruments under his supervision directly so as not to be biased by his family or his schools' impact on his answers. The researcher clarified the items of the instruments to them and asked them to answer straight away, without the presence of the teachers, managements, or parents. The researcher was very careful not to influence the students' answers.

On the other hand, the researcher developed a training program to develop the perceived cognitive competence. It includes 12 sessions over four months, each session lasts 90 minutes. The training program included activities and practices in order to improve the cognitive competence among student with learning disabilities. The current researcher took into consideration in training program designed as follow: using diverse activities and tools; planning and designing session before start; determining the role of both trainer and students in each session; determining the level of targeted performance for each session; and using diverse reinforcements.

Some strategies and techniques were used such as instructions, feedback, modeling, social reinforcement, role playing, homework, and assignment.

Pre-test and post-test for both groups were conducted in the first and final sessions to compare both groups regarding the cognitive competence.

3. RESULTS

This section presents and discusses the findings obtained from 26 respondents. The results shown in this section have already been processed and analyzed; also the findings

demonstrated the potential for merging theory and practice.

The results were classified into two categories. The first highlighted the means and standard deviations after the treatment test, and the second provided the Analysis of covariance (ANCOVA) before and after applying the program. It is worth mentioning that the results were obtained from 26 respondents.

To determine if the training program affected the experimental group, the mean and the standard deviation were calculated after the treatment test.

Table 1 indicated that the mean values in terms of the cognitive competence of the students with learning disabilities. It also showed that there were differences in the performance of the students after applying the training program on the experimental group. The mean value of the experimental group was (16.743), while the mean values of the control group were (13.449); this revealed difference (3.294) in favor of the experimental group.

Table 2 showed the analysis of covariance (ANCOVA) before and after applying the training program. This type of analysis was carried out to test the variances among performance of the students with learning disabilities prior applying the training program.

As shown in Table 2, the results indicated that there were statistically significant differences at ($P = 0.05$) in the perceived cognitive competence of the students with learning disabilities due to the program in favor of experimental group, as

the F ratio was (28.283) and alpha was (0.000). Upon that, the results revealed that there were no statistically significant differences among the students with learning disabilities' performance due to gender, as the F ratio was (0.101) and alpha was (0.752).

4. DISCUSSION AND CONCLUSION

The result of the study indicated that the developed training program was useful for students with disabilities. The students who attended this special training program acquired cognitive competence to continue their studies and participated in different activities. Student should be given individualized and adequate treatment according to their disabilities, because treating them as one group doesn't motivate them for any educational participation. In some cases, wrong treatment and over generalization de-motivate and be disappointing the students. This study result affirmed what was obtained in previous studies [1,4,6,7,12,16].

The result also showed that there was no difference between male and female students regarding to the perceived cognitive competence which they received through the training program. This result indicated that teachers need to focus on the students' disabilities rather than gender difference. This study result was different from this obtained previously in study of Trautner [29], which indicated that there was significant influence of gender. The results of this study was in line with the results of [30,31], which indicated that there was no influential role in regards to gender differences.

Table 1. Means and standard deviations after treatment test

The group	Gender		Total
	Males	Females	
Control	<i>M</i>	13.129	13.449
	<i>STD</i>	0.610	0.433
Experimental	<i>M</i>	16.615	16.743
	<i>STD</i>	0.607	0.433
Total	<i>M</i>	14.872	15.320
	<i>STD</i>	0.429	0.429

Table 2. Analysis of covariance (ANCOVA) before and after applying the program

Source of difference	Sum squares	DF	Mean sum squares	(F) Value	A
Test results	33.334	1	33.334	6.973	0.011
The program	135.195	1	135.195	28.283	*0.000
Gender control group	2.601	1	2.601	0.544	0.464
Gender experimental group	0.481	1	0.481	0.101	0.752
Error	224.666	47	4.780		
Total amount	374519	51			

The result of this study is applicable in co-schools, since no need to classify the students due to gender. Moreover, the result of this study can be applied in different schools in Jordan which have students with disabilities. This training program is applicable in Middle East countries, because it gave good results in Jordan schools. It was noted that students with learning disabilities suffer from a decline in self-concept, and competences, this result went with the results of the relevant previous studies. This necessitated the urgent need to design training programs to develop the concept of perceived competence among disabled students.

Eventually, it is worth mentioning that the current study limited in selected sample. It was selected from student with learning disabilities in class four (purposive sample), as well as the reduced sample can limit generalizations. Other limitation was the instrument used (Perceived Competence Scale for Children), because using other instrument may change the results. Other reason, the current author did not make any adaptation on Perceived Competence Scale for Children – Arabic version, which was adapted by Sheikha [7].

5. RECOMMENDATIONS AND IMPLICATION

Throughout the review of literature it was indicated that there was a small number of studies in the Arabic context examined the perceived cognitive competence of students with disabilities in general and students with learning disabilities in particular. The interest in the categories of special education is not limited to the concept of a human as it is also based on righteousness and charity, but instead it is a plan of human resources development which relies primarily on the use of class, which was, until recently, untapped. And advocate of modern education the right of everyone to benefit from the educational services that help to grow and access to the maximum extent qualifies his potential, and to create better ways for him to developed an integrated way to self-realization, and self-development in its various aspects and access to the maximum level he can react, and that the individual is aware of his capabilities and accept and understand the limits of these capabilities.

Students with learning disabilities lack success; unsuccessful attempts by the child seems to make it less acceptable to teachers and peers

and perhaps to his parents, where his failure to support the frequent negative attitudes toward him. Thus increasing the sense of frustration which leads again to further ill-compatibility and reverse the self-image and these children become unable to cooperate with others, teachers and family, which develops their sense of helplessness [27].

Despite a long period on the adoption of resource rooms to help children with special needs, and despite the emergence of several studies aimed to study the characteristics of this category, studies aimed at developing self-concept in this category are few. Therefore, the current research calls for the design and preparation of the program built on the foundations of psychological, social and educational, designed to help students with learning disabilities to improve their understanding of themselves, and overcome the difficulties they suffer. The current study deals with a vital subject addressed in very few studies in the Arab world, noting that the concept of low perceived competence may be a reason to reduce the child's ability to acquire information and skills, and lack of access to schooling. And this means that the lack of a sense of self-sufficiency may leave its mark on the overall personality of the child.

In accordance to the findings of the current research, the following recommendations were highlighted:

- The Ministry of Education should detect the proper means to improve the learning of students with learning disabilities.
- The concerned parties at the Ministry of Education should develop training programs targeted the students with learning disabilities to improve their self-understanding.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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