

Effectiveness of a Braille Training Program for teachers in Jordan

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ABSTRACT

This study aimed to know the effectiveness of a braille training program for the teachers in Jordan. Achieve the study aims; the questionnaire of effectiveness braille training program used to collect data from (15) teachers before and after implementation of the program. The findings indicated that the program was effective, and it contributed to increasing teachers' knowledge about reading and writing braille.

Keywords

Braille, Low vision, Blind people, Visual Impairment, The higher council for the rights of persons with disabilities

Introduction

Jordan signed and ratified the Convention on the Rights of Persons with Disabilities (CRPD) during the years (2007- 2008); it becomes obliged to implement the articles of (CRPD). One of these articles is (24) confirmed the education and inclusion of persons with disabilities in regular schools as much as possible. To implement of the articles in the (CRPD), Jordan established the higher council for the affairs of persons with disabilities (HCPD) in 2007, in 2017 the name of (HCPD) changed to the higher council for the rights of persons with disabilities (HCPD). During this period, Jordan has passed the law of rights of persons with disabilities (law no 31 for the year 2007), which changed to (law no 20 for the year 2017). Both laws confirmed the right of education and inclusion for persons with disabilities in the regular schools, and this requires training teachers in these schools to teach students with disabilities through training programs (AlTarawneh, 2018; Thompson, 2018). This study sheds light on the effectiveness of the braille training program for the teachers in regular schools, which was implemented by the higher council for the rights of persons with disabilities.

Braille is the system of touch reading and writing which utilizes raised dots to represent the

letters of the print alphabet for people with visual impairment and blindness. The braille system also includes symbols to represent punctuation, mathematics and scientific characters, music, computer notation, and foreign languages (Perkins School for the blind, 2018). Braille is primarily a means of literacy for blind people and helps them to self's - fulfillment (Schroeders, 1996; Wells-Jensen, Wells- Jensen & Belknap, 2005).It was and still is the primary reading method for blind to access information and education independently (Hung, 2008; Khochen, 2011; Roe, Rogers, Donaldson, Gordon & Meager, 2014; Spungin, 1996; Wittenstein, 1994). It also helps blind people to obtain a job (Schroeder, 1996). And there is an indication that the level of braille usage among the employed blind population was high compared to unemployed (Schroeder, 1996), and it found that those who learned braille had higher employment rates and educational levels were more financially self- sufficient (Ryles, 1996). Braille is more than a tool or means of literacy for the blind people who use it, braille as a symbol of independence and competence also, it is self-acceptance and group identity (Schroeders, 1996; Spungin, 1996). Therefore, the problem of braille illiteracy must be considered more than just a literacy issue (Schroeder, 1996; Spungin, 1996). Despite the benefits of braille however, rates of

literacy in braille have been decreasing (Wells-Jensen et al., 2005). There is an indication of the decreasing number of people with visual impairment and blind who usage Braille (Altarawneh, 2014; Khochen, 2011; Marshall, 2012; Roe et al., 2014; Schroeder, 1996; Singleton & Burns, 2012). The rate of braille readers differs from one country to another, and from stage to another and scientific studies around the usage of braille in the Middle East are minimal (Khochen, 2011). In Jordan, there is one study indicated to the limited usage of braille by the Jordanians blind (Altarawneh, 2014). One of the causes of decreasing usage braille by people with visual impairment is the limited training of teachers of students with visual impairment and blind on the braille and their attitudes towards braille (DeMario, Lang & Lian, 1998; Penava, Prcic & Ilicic, 2017). Teachers of students with visual impairment and their attitudes play an important role in student's acquisition of braille literacy skills (Penava et al., 2017).

The attitudes of teachers play an important role in students' acquisition of braille literacy skills (De Mario et al., 1998; Penava et al., 2017; Wells- Jeansen et al., 2005). Teachers' positive attitudes towards braille contribute to the literacy of students with visual impairment and blindness, and not only that but also, it helps an increased number of usages braille (Wittenstein, 1994). Unfortunately, not all teachers have a positive attitude towards braille (Abu Shokeedem, 2013; Altarawneh, 2014; Farrow, 2015; Wittenstein, 1994), because they do not have qualified to teach braille. Also, the codes of braille are challenging when teachers used contracted braille (Johnson, 1996), and from viewpoints of teachers, teaching by braille consuming a great time (Farrow, 2015), and the technology contributed access to information in a short time (Penava et al., 2017). Braille also is unsuitable to students with multiple disabilities who are not able to read braille due to their limited cognitive, motor, or perceptual abilities (Penava et al., 2017). The last thing, braille needs unavailable or high-cost tools like Perkins Brailier, slate, and stylus and brailleSense Polaris (Altarawneh, 2014; Altarawneh, 2018). Teachers' attitudes towards braille can improve by training programs, whether pre or in service. And

this program should have talked about the importance and the benefits of braille for people with visual impairment and blind (Hung, 2008; Johnson, 1996; Keil, 2004; Marshall, 2012; Moodley, 2004; Nadeem, 2015; Njue, Aura & Komen, 2014; Penava et al., 2017; Schroeder, 1996; Wells- Jensen et al., 2005; Wittenstein, 1993; Wittenstein, 1994; Wittenstein & Pradee, 1996).

Also, readiness skills are essential learning braille and teachers should know these skills to help students with visual impairment and blind to learn braille reading and writing (Abu Shokeedem, 2012; Alhourani, 2007; Johnson, 1996; Lamb, 1996; Njue, Aura & Komen, 2014; Wittenstein & Amato, 2002; Wittenstein & Pradee, 1996). these skills include tactile and fine motor skills, listening, attention and expression skills, concepts building, reading books skills, and story skills, and because of the importance of readiness skills in helping students with visual impairment to learn. Teachers' training programs should have focused on these skills (Alhourani, 2007; McComiskey, 2019). After teachers of students with visual impairment and blind know the readiness skills, they should know braille reading and write to be able to teach these skills for students (Abu Sokeedem, 2012; Alhourani, 2007; Wittenstein & Pradee, 1996). Johnson (1996) recommended that teachers of students with visual impairment and blind must pass the braille competence test to complete their college. Braille reading and writing skills of teachers must have proficiency with brailier, ability to read braille by touch or vision, knowledge of braille reading methodology, competence with slate and stylus, development of teachers made materials (Alhourani, 2007; Johnson, 1996; Wittenstein & Amato, 2002). Visual impairment and blindness are a very low incidence disability, and only a few children use braille as their literacy medium (Roe et al., 2014). In Jordan, Altarawneh (2014) observed the students with visual impairment and blindness in school-age in southern areas are learning in the Royal Academy for Blindness in Amman, and this makes these students stay in the academy. They return to their families over the weekend or holidays, this isolates them from their families and community.

Johnson (1996) believes the inclusion of students with visual impairment and blind into the regular classroom is a good idea, many students who benefit from being integrated into classes with sighted students and they need daily contact with a teacher of students with visual impairment and blind in a resource room.

In Jordan, Altarawneh (2014) observed many issues first, Lack of resource rooms for students with visual impairment and blind. Second, there are no resources rooms in all schools in Jordan. Third, there are no special teachers for students with visual impairment and blindness; teachers have a degree in special education in general or other specializations trained during the service, and this reflects the problems of pre- and in-service teachers' training programs in Jordan. Itinerant teachers usually obtain some formal training in the education of children with visual impairment and blindness, either through training courses or a distance education program (e.g., a three-year diploma in special educational needs). The training programs of teachers to be Itinerant teachers are establishing in several low- and middle-income countries in partnership with local ministries of education, and often with the support of non-governmental organizations (Lynch & McCall, 2007). The experience of itinerant teachers is appropriate when the number of students in regular school is minimal (AlKhteb, 2008). Nadeem (2015) found that most teachers of the students with visual impairment and blindness are itinerant, and it is common for their students with visual impairment and blindness to receive (1-3) or fewer contact hours per week with them.

Finally, the conviction of the Importance of braille and the positive attitudes towards it contributes to its spread and usage by a lot of blind people (Wittenstein, 1993; Schroeder, 1996; Wells- Jeansen et al., 2005; Marshall, 2012). This study sheds light on the effectiveness of a braille training program to improve the attitudes of teachers towards braille and increase the competence of these teachers to teach braille for students with visual impairment and blindness. So, the questions of this study are:

Question1: Are there significant differences in the braille knowledge of teachers before and after applying for the training program?

Question2: Are there significant differences in the attitudes of teachers towards braille before and after applying for the training program?

Question 3: Are there significant differences in teachers' knowledge of braille reading and writing readiness skills before and after applying for the training program?

Question 4: Are there significant differences in teachers' Knowledge of Braille reading and writing skills before and after applying for the training program?

Methods

This study is semi-experimental aimed to know the effectiveness of a braille training program for teachers in Jordan. Participants in this study were 15 teachers (seven males and seven females) who nominated for the training program by the Ministry of education; these teachers were from the different specializations of Tafila and Karak schools. In this study, the researcher used the questionnaire of the effectiveness of a braille training program to assess the following:

- Attitudes towards braille before and after implementation of the program.
- Readiness skills of reading and writing braille before and after implementing the program.
- Braille reading and writing skills before and after implementation of the program.

Researchers developed the questionnaire of the study after reviewing previous literature. It ultimately consisted of 3 parts: Part 1 assessed the attitudes of teachers towards braille; it consisted of (15) items (positive and negative). Part 2 included (10) items about the knowledge of teachers about readiness skills of reading and writing braille. Part 3 consisted of (11) items about the knowledge of teachers about braille reading and writing skills (Appendix 1). The researchers established the content validity of the questionnaire of this study, reviewing the previous literature of braille. Then, researchers prepared the initial version of the study questionnaire and

presented it to ten experts and specialists in the field of educational sciences, special education and the Arabic language for comment whether the items and the questions were appropriate for the title of the study, the Jordanian teachers and the accuracy of the language. Following the comments of experts and specialists, the questionnaire of the study consisted of three parts. Part 1 assesses the attitudes of teachers towards braille; it consisted of (15) items, negative and positive. researchers calculate scores on the negative items as follows: (strongly agree=1, agree=2, neutral=3, disagree=4, and strongly disagree=5).

Additionally, they computed scores on the positive items as follows: (strongly agree=5, agree=4, neutral=3, disagree=2, and strongly disagree=1). The high score on the part1 is (75). If the total scores of part1 equal (46) or more, the attitudes towards braille are positive. Part 2 of the questionnaire included (10) items about the readiness skills of reading and writing braille. The high score on part 2 is (50), and if the total scores of part 2 equal (41) or more, the knowledge of teachers about braille readiness skills is very good. Part3 included (11) items about teachers' knowledge of braille reading and writing. The high score on part 3 is (55), and if the total scores of part 3 equal (45) or more, the knowledge of teachers about braille reading and writing skills is very good. Also computed was the reliability questionnaire of part 1, part 2, part 3, and all parts of the questionnaire after collecting data by Cronbach alpha's formula; part 1 was (0.793), part2 (0.962), part3 (0.962), and all parts were (0.967). After developing the questionnaire of this study, researchers applied it to teachers, the purpose of the study was clarified to them, as was how to answer the questionnaire.

The Training Program of Braille

The program has been implemented at the southern region office in the Higher Council for the Rights of Persons with Disabilities (HCD) by tow trainers, one of them is blind and holds a Ph.D. in Arabic Researchers used Many tools in training, such as many Perkins brailier, slates and styluses, papers of braille, braille sense Polaris and many materials and tools to braille readiness skills. The training program consists of 16

sessions, each session duration 4 hours. The contents of the program were as follows:

Sessions (1-7): Rules of the training program and braille codes of Arabic letters, and exercises about it.

Session (8): Code of numbers by braille, and exercises about it.

Session (9): Arithmetic (+, -, ×, ÷), and exercises about it.

Session (10): Codes of English letters by braille, and exercises about it.

Session (11): Braille reading and writing in English, and exercises about it.

Sessions (12-15): Contractions of braille, and exercises about it.

Sessions (16): Applications and evaluation.

Data Analysis

To answer question 1, "Are there significant differences in the braille knowledge of teachers before and after applying for the training program?" researchers computed the means and standard deviations for the scores of the sample of the study on the questionnaire before and after the applied training program. Table 1 shows those calculations.

Table 1. Means and standard deviations of the scores of the study sample

Score	Mean	N	Std. Deviation
BEFORE	121.13	15	33.5
AFTER	142	15	9.9

Table 1 shows the virtual differences in scores of teachers before and after applying for the training program. To determine whether these differences are statistically significant, a Wilcoxon Signed Rank Test, and the findings are reported in Table 2.

Table2. findings of Wilcoxon Signed Rank Test

		N	MEAN RANK	SUM OF RANKS	SIG
DEGREE1*- DEGREE2**	NEGATIVE RANKS	4	5.25	21	.027***
	POSITIVE RANKS	11	9	99	
	TOTAL	15			

*Total degree before applied the program. ** Total degree after applied the program.

*** Statistically significant at the level of significant ($P \leq 0.05$).

Table 2 shows the differences in braille knowledge of teachers due to the training program. The result means that the training program was effective, it agrees with results of these studies: (Johnson, 1996; Moodley, 2004; Njue et al., 2014; Penava et al., 2017; Schroeder, 1996; Wells- Jensen et al., 2005; Wittenstein, 1993; Wittenstein, 1994; Wittenstein & Pradee, 1996). The present and previous findings confirm the importance of in-service teachers training programs in increasing teachers' experiences.

To answer question 2, "Are there significant differences in the attitudes of teachers towards braille before and after applying for the training program?" the means and standard deviations for the scores of the sample of the study on part 1 before and after applying the training program were computed. Table 3 shows those calculations.

Table 3. Means and standard deviations of the scores on the part 1

SCORE	MEAN	N	STD. DEVIATION
BEFORE	44.15	15	9.11
AFTER	50	15	5.6

Table 3 shows the virtual differences in scores of attitudes of teachers towards braille before and after applying for the training program. To determine whether these differences are statistically significant, a Wilcoxon Signed Rank Test, and the results are reported in Table 4.

Table4. Results of Wilcoxon Signed Rank Test

		N	MEAN RANK	SUM OF RANKS	SIG
DEGREE1* - DEGREE2*	NEGATIVE RANKS	5	5.70	28.50	0.073
	POSITIVE RANKS	10	9.15	91.50	
	TOTAL	15			

*Degree of part 1 before applied the program. ** Degree of part 1 after applied the program.

Table 4 shows that there are no significant differences in the attitudes of teachers towards braille due to the training program. Table 3 shows the Mean scores for teachers in part 1 before the training program was applied is (44.15). This value less than (46), it means the attitudes of teachers towards braille were not positive, but after applying for the program, it was (50) more than (46), it means the attitudes of teachers towards braille were positive. In general, the differences between the two Means are virtual but not significant statistically, and table 4 shows that. Anyway, the virtual differences may be due to one of the trainers was blind, and Well- Jensen and others (2005) found if trainers implement the braille training program with visual impairment or blinds, they will be effective and they will contribute to the improvement attitudes towards people with visual impairment or blindness and braille.

To answer question 3, "Are there significant differences in teachers' knowledge of braille reading and writing readiness skills before and after applying for the training program?" the means and standard deviations for the scores of the sample on part 2 before and after applying the training program were computed. Table 5 shows those calculations.

Table 5. Means and standard deviations of the scores on the part 2

	MEAN	N	STD. DEVIATION

BEFORE	38.7	15	14.5
AFTER	43.87	15	3.2

Table 5 shows the virtual differences in degrees of teachers' knowledge of braille reading and writing readiness skills before and after applying for the training program. To determine whether these differences are statistically significant, a Wilcoxon Signed Rank Test, and the results are reported in Table 6.

Table 6. Results of Wilcoxon Signed Rank Test

		N	MEAN RANK	SUM OF RANKS	SIG
DEGREE 1*- DEGREE 2**	NEGATIVE RANKS	8	6.7	53.5	0.710
	POSITIVE RANKS	7	9.5	66.5	
	TOTAL	15			

*Degree of part 1 before applied the program. ** Degree of part 1 after applied the program

Table 6 shows that there are no significant differences in the teachers' knowledge of braille reading and writing readiness skills due to the training program. Generally, teachers have previous experience that reading and writing skills need readiness skills. So, they have enough information about the necessity of readiness skills to learn reading and writing skills in general. This finding agrees with these studies: (Abu Shokeedem, 2012; Alhourani, 2007; Njue et al., 2014).

To answer question 4, " Are there significant differences in teachers' Knowledge of braille reading and writing skills before and after applying for the training program " researchers computed the means and standard deviations for the scores of the sample on part 3 before and after applying for the training program. Table 7 shows those calculations.

Table 7. Means and standard deviations of the scores on the part 3

	MEAN	N	STD. DEVIATION
BEFORE	38.87	15	14.5
AFTER	48.13	15	3.6

Table 7 shows the virtual differences in degrees of teachers' knowledge of braille reading and writing skills before and after applying for the training program. To determine whether these differences are statistically significant, a Wilcoxon Signed Rank Test, and the results are reported in Table 8

Table 8. Results of Wilcoxon Signed Rank Test

		N	MEAN RANK	SUM OF RANKS	SIG
DEGREE 1*- DEGREE 2**	NEGATIVE RANKS	2	6.8	13.5	0.025**
	POSITIVE RANKS	11	7.1	77.50	
	TIES	2			
	TOTAL	15			

*Degree of part 1 before applied the program. ** Degree of part 1 after applied the program

*** Statistically significant at the level of significant (P≤ 0.05).

Table 8 shows that the differences in teachers' knowledge of braille reading and writing skills due to the training program. The finding means that the training program was effective, it agrees with findings of these studies: (Johnson, 1996; Moodley, 2004; Njue et al., 2014; Penava et al., 2017; Spungin, 1996; Wells- Jensen et al., 2005; Wittenstein, 1993; Wittenstein, 1994; Wittenstein & Amato, 2002). Which confirmed the importance of braille training program in increasing teachers' knowledge of braille, and thus their ability to teach students with visual

impairment or blindness and improve students' attitudes towards braille.

Conclusion

In general, the prevalence of people with visual impairment or blindness also teachers of them who can read and write braille is low in Jordan. One of the most important causes of illiteracy braille for students with visual impairment or blindness is the lack of qualified teachers who know the braille so; it is essential to train teachers on it whether it be pre-service or in-service not only that but also follow-up and knowledge of the effectiveness of training programs by scientific research.

The training program was effective because teachers were able to read and write braille at the end of the program. Although teachers know the importance of readiness skills in teaching braille, researchers have included these skills in the training program to emphasize their importance. It also defines the readiness skills that people with visual impairments and blindness need to develop tactile skills and to read braille later.

Jordan is a low-income country, and it may not be possible to train many teachers at state expense; this requires that there be a dedicated academy to train teachers at their own cost to become shadow teachers. There is an academy specialized in training teachers in general in teaching skills is the queen Rania teachers academy, but it does not train teachers in reading and writing braille. It is appropriate to expand the training fields of this academy, including braille reading and writing training.

The effect of the training program was not clear and significant on attitudes towards braille, and this may be due to the short period of the training program. After implementing the program, the teachers read and write braille slowly compared to the usual way, this may lead them to believe that reading and writing braille takes a long time, and this may affect attitudes toward braille.

Implications and Recommendations for Future Research

The high council implemented the training program for the rights of persons with disabilities.

It needs to be followed up to achieve its aims to have qualified itinerant teachers who can teach braille for students with visual impairment or blind; this requires further research into the long-term effectiveness of these programs. Despite teachers were trained to read Braille, and despite the many exercises they did, they could not read braille by touch after wearing a mask; this confirmed the importance of tactile training both sighted and people with visual impairment and blind by training programs and knowledge of the effectiveness of these programs by scientific research. The last thing, there were differences in the ability and speed of teachers to read and write braille. These differences may be caused by the effect of some variables like sex, educational level, experiences, specialist, and previous experiences with people with visual impairment and blindness. This requires further research to know that.

The effect of the training program was not clear and significant on attitudes towards braille, and this may be due to the short period of the training program. This assumption needs further research on a reapplied training program in a long time on many teachers and focuses more on the practical side. It is appropriate to know the effect of the variable speed of reading and writing braille on attitudes towards braille. The last thing, the teachers were taught braille using a variety of equipment: slate and stylus, Perkins Braille and electronic Polaris, this needs more further research to know if there was any correlation between the attitudes of the teachers and the equipment that they used.

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