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## **Using Evidence-based Constructivism Instructional Strategies with Effect Size above 0.40 in Kuwait`s Inclusion Classrooms**

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**Abstract:** In this study, evidence-based constructivism instructional strategies with an effect size above 0.40 were used when educating students with special needs in Kuwait`s inclusion classrooms. Data collection involved a survey that included demographic variables (i.e., nationality, age, education qualification, teaching experience, major, educational district, school gender-type) and research variables (i.e., peer tutoring strategy, cooperative learning strategy) to measure inservice inclusion classroom teachers` points of view. Results revealed majority use of both strategies and significant differences among those aged 24-26 years old engaged in JIGSAW cooperative learning strategy only. Recommendations include offering continuing professional development for special education teachers in Kuwait's public inclusive elementary schools, further research on evidence-based constructivism instructional strategies to investigate how they may improve the learning and achievement of students with special needs in inclusive elementary schools, and training of pre-service teachers in teacher education programs in Kuwait.

**Keywords:** Evidence-based instructional strategies, Inclusive Education, Inclusion Teachers, Kuwait.

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## **Introduction**

Evidence-based instructional strategies, especially those related to the education of students with special needs, vary in inclusive education schools, but a few are related to theoretical theories of constructive learning. Research (Ertmer and Newby, 2013; Lenjani, 2016; Hulgín and Drake, 2011) has shown that improved learning and achievement among students with special needs in inclusion classrooms is due to the use of evidence-based constructivism instructional strategies. These evidence-based cognitivism instructional strategies are peer tutoring strategy and cooperative learning strategy. Further, these evidence-based constructivism instructional strategies have an effect size above 0.40 when used to educate special needs students in public schools. While Hattie (2008-2017) determined the effect sizes of all evidence-based cognitivism instructional strategies, it has become necessary to measure the extent to which these evidence-based constructivism teaching strategies influence the education of students with special needs in Kuwait's public inclusion classrooms and/or schools.

## **Research Purposes**

This research study had two purposes. The first purpose was to review evidence-based constructivism teaching strategies used by inclusion classroom teachers with special needs students in Kuwait public elementary schools, according to demographic variables (i.e.,

nationality, age, education qualification, teaching experience, major, educational district, and school gender-type). The second was to identify differences in inclusion classroom teachers' points of view toward using evidence-based constructivism teaching strategies with an effect size above 0.40 in educating special needs students in Kuwait public elementary schools according to two research variables (peer tutoring strategy, and cooperative learning strategy).

### **Importance of the Study**

This study sought to determine the extent to which inclusion classroom teachers used evidence-based constructivism teaching strategies with an effect size above 0.40 in educating special needs students in Kuwait's public elementary schools. It is important both to ascertain the degree to which inclusion classroom teachers use evidence-based constructivism instructional strategies, and identify findings and recommendations offered by other research studies related to evidence-based constructivism teaching strategies with an effect size above 0.40. From a practical perspective, the importance of the current study is to measure these teachers' points of view about using evidence-based constructivism teaching strategies in educating special needs students. Study findings will assist education administrators in identifying priorities and procedures necessary to implement inclusive education from an evidence-based perspective when using evidence-based constructivism teaching strategies with an effect size above 0.40 in educating special needs students in Kuwait's public elementary schools. In addition, educational researchers will be interested in learning more about the best effect size for evidence-based constructivism teaching strategies in educating special needs students in inclusion classrooms.

### **Literature Review: Background**

Peer tutoring is defined as a teaching and learning approach (Abu Ghanima, 2020), that aims to educate two learners (Topping, 1996), and practically these learners are a higher performer and low

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achiever who work together, interact and focus their attention towards academic enhancement (Colcraft and Rajasekar, 2019). From theoretical perspectives, there are three interlinked views on peer tutoring (Thurston et al., 2021), that include the Piagetian based peer tutoring (effective learning), Vygotsky's theories (supported performance and the zone of proximal development), and social interdependence theory (fulfilling learners' roles effectively). Research (Thurston, Cockerill, and Chiang, 2021) has found a positive impact of peer tutoring on learners' outcomes. Peer tutoring helps both learners improve academically and reduce the psychological stress of learning (Topping, Duran, and Van, 2015). Other research (i.e., Kroesbergen and Van Luit, 2003) found interventions involving the use of peer tutoring indicating smaller effects on learners with special educational needs. While others stated that the peer tutoring developing pro-social behaviours and social communication (Moeyaert, Klingbeil, Rodabaugh, and Turan, 2019), increasing linguistic interaction (Slavin, Hurley, and Chamberlain, 2003), showing effectiveness in both social and academic development (Bowman-Perrott, Davis, Vannest, Williams, Greenwood, and Parker, 2013), and indicating positive effect sizes (Beirne-Smith et al. (1991).

Cooperative learning is a "learning approach in which students work in small groups in relation to a specific learning task" (Al-Shammari and Mintz, 2021, p. 4). In Specifics, cooperative learning is an instructional technique that is structured and organized where all small groups work together toward achieving a common goal (Slavin, 1996). Cooperative learning strategies are varied and included the JIGSAW cooperative learning strategy, which is an evidence-based practice (Al-Shammari and Mintz, 2021), and has a constantly high effect size (Hattie, 2008-2017). Research (i.e., Abuhamda, Darmi, and Abdullah, 2020) stated a JIGSAW cooperative learning strategy created with the goals of reducing conflict, enhancing positive educational outcomes, helping students to realize that they are essential components of a whole and

encouraging cooperation in a learning environment. Other research results (Iswan, 2021) revealed that a higher average score of learning achievements reached by groups of students who practiced the JIGSAW cooperative learning strategy in the classroom. The JIGSAW cooperative learning strategy is an alternative that can be used in inclusive schools (Isna and Nurul Hidayati, 2016), in which created positive learning environment where students enjoyed learning in activities based on JIGSAW cooperative learning strategy (Susanti and Subekti, 2020).

### **Research Methods**

In this study, a descriptive research method was used to study, conduct, and interpret results to determine how well special education teachers used evidence-based constructivism instructional strategies with an effect size above 0.40 in educating special needs students in Kuwait's inclusion classrooms, according to demographic variables (nationality, age, education qualification, teaching experience, major, educational district, and school gender-type) and research variables (peer tutoring strategy, and cooperative learning strategy). This includes: (1) design, (2) participants, (3) instrument development, and (4) data collection and analysis.

### **Design**

This research relied on three procedures. First, a 29-question survey was developed –seven questions related to demographic variables and 22 related to the research variables. Second, the survey was distributed to special education teachers in Kuwait's inclusion classrooms. Third, the results were analyzed to gain an understanding of how special education teachers practice evidence-based constructivism teaching strategies, and to finalize results for this research study.

### **Participants**

The total sample was 317 special education teachers (F=296, M=21) in all 24 Kuwaiti public inclusive elementary schools. A

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hundred and fifty (150; 47.3% response rate) responded by the end of the spring semester of the 2018-2019 school year. The 150 participants were all female special education teachers ( $N=150$ , 100%). Their nationalities were both Kuwaiti ( $N=95$ , 63.3%) and non-Kuwaiti ( $N=55$ , 36.7%). Ages ranged from 21-23 years ( $N=27$ , 18%), to 24-26 years ( $N=28$ , 18.7%), 27-29 years ( $N=24$ , 16%), to 30 years and above ( $N=71$ , 47.3%). Education qualifications were bachelor's degree (BA) in curriculum and instruction ( $N= 103$ , 68.7%), and bachelor's degree (BA) in special education ( $N= 47$ , 31.3%). Participants' subject teaching majors were in one of six different teaching subjects: Science ( $N=11$ , 7.3%), mathematics ( $N=15$ , 10%), Arabic language ( $N=34$ , 22.7%), English language ( $N=20$ , 13.3%), Islamic studies ( $N=51$ , 34%), and social studies ( $N=19$ , 12.7%). Teaching experiences varied from less than three years ( $N= 60$ , 40%), to 3-5 years ( $N= 22$ , 14.7%), 6-10 years ( $N= 24$ , 16%), to more than ten years ( $N= 44$ , 29.3%). The participants worked in one of six different educational districts, Assemah ( $N= 13$ , 8.3%), Jahra ( $N= 18$ , 20%), Farwanyia ( $N= 29$ , 19.3%), Hawali ( $N= 33$ , 22%), Mubarak Al-Kabeer ( $N= 34$ , 22.7%), and Al-Ahmadi ( $N= 23$ , 15.3%), so were spread throughout Kuwait.

### **Instrument Development**

The survey on the use of evidence-based constructivism teaching strategies was developed and originally written in Arabic, which is the formal learning language in Kuwait's public inclusive education schools. It was then translated into English for the purposes of this research. The validity and reliability of the questionnaire items were assessed as follows. First, face and content validity steps were performed: (1) the questionnaire was given to seven university professors specializing in special education curriculum and instruction, and all suggested changes were implemented; and (2) construct validity was tested using a pilot study consisting of 20 special education teachers who were randomly selected. Results indicated a significant correlation

between each of the four dimensions and the overall questionnaire. Second, the reliability of the survey was tested using Cronbach's Alpha – the score of 0.831 indicated a high level of reliability.

The questionnaire was divided into two sections and consisted of 29 items (see Appendix No. 1). Each item was measured according to a four-point Likert scale (from 1=*rarely*, 2=*sometimes*, 3=*mostly*, to 4=*always*). The first section focused on seven demographic characteristics of participants, (nationality, age, education qualification, teaching experience, major, educational district, and school gender-type) related to independent variables. The second section included 22 items divided into two dimensions, related to dependent variables (peer tutoring strategy, and cooperative learning strategy).

The first dimension consisted of twelve items (1-12), which focused on peer tutoring strategy by examining specific aspects of skills, steps, and procedures. Representative items from the first dimension included the following: *"I clearly explain to my students the importance of using peer tutoring strategy in developing the skills to be learned"* and *"I use the peer teaching strategy in my teaching to encourage students with high achievement to help their peers with low and poor achievement during the implementation of the lesson activities"*. The second dimension consisted of 13 items (13-22), that focused on cooperative learning strategy by examining specific aspects of the skills, steps, and procedures. Representative items from the second dimension included the following: *"My students with special educational needs' learning and academic achievement improved positively because of the use of cooperative learning strategy"* and *"I practice JIGSAW cooperative learning strategy in my classroom instructional activities included putting them in heterogeneous groups to achieve instructional objectives"*.

### **Data Collection and Analysis**

The survey was distributed via an online application and administered for two weeks at the end of the spring semester of the 2018-2019 school year. The data were coded and analyzed using

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several statistical tests, including means, standard deviation, frequency-percent, t-test, correlation, one-way analysis of variance (ANOVA), and least significant difference (LSD), all using SPSS version 20.0.

### **Results**

This study set out to answer two research questions. First, to what degree do special education teachers use evidence-based instructional strategies with an effect size greater than 0.4 in inclusion classrooms, and what are those teachers' views about these strategies as revealed in research variables (Peer Tutoring Strategy, JIGSAW cooperative learning strategy)? Second, are there differences in those views related to the demographic variables of: nationality, age, education qualification, teaching experience, major, educational district, and school gender-type?

Relationships were examined among seven demographic variables (nationality, age, education qualification, teaching experience, major, educational district, and school gender-type) and two research variables (peer tutoring strategy, and JIGSAW cooperative learning strategy). Results are presented below – first, according to mean ratings of participants on using evidence-based constructivism instructional strategies with an effect size greater than 0.4 in inclusion classrooms, and then according to analyses of relationships among the seven demographic variables and two aspects of the evidence-based constructivism instructional strategies with an effect size greater than 0.4.

### **Results for Question (1)**

Question (1) was: “What is the degree of special education teachers using evidence-based instructional strategies with an effect size greater than 0.4 in the inclusion classrooms, from the viewpoints of special education teachers in Kuwait's inclusion classrooms, due to some independent variables (Peer Tutoring Strategy, and JIGSAW cooperative learning strategy)”. To answer this question, tests (i.e., means and standard deviation) were used.



Table 1 shows that the overall mean ratings of participants on all items focusing on the peer tutoring strategy dimension and JIGSAW cooperative learning strategy dimension was 3.34 with a standard deviation of 0.38. This indicates a high range of use of both strategies with students with special educational needs. Both strategies have equal means of 3.34 -- the peer tutoring strategy was used more by participants with SD of 0.39 and followed by the JIGSAW cooperative learning strategy with SD of 0.44.

Table 1. Means and Standard Deviations for All Items.

Dimension	Means (M)	Standard Deviation (SD)	Rank
Peer Tutoring Strategy	٣,٣٤	٠,٣٩	1
JIGSAW Cooperative Learning Strategy	٣,٣٤	٠,٤٤	2
Overall	٣,٣٤	٠,٣٨	

As presented in Table 2, the highest mean rating of 3.51 was obtained for both item 8, "*I provide to all students worked in peer tutoring groups all appropriate encouragement and motivation*", and item 7, "*I monitor and follow up all students working in peer tutoring groups when practicing the peer tutoring strategy*". The lowest mean rating of 2.94 was obtained for item 12, "*My role as a classroom teacher when using the peer tutoring strategy is only to guide peer-student during instructional activities*". This indicates that special education teachers practiced the peer tutoring strategy at an acceptable level, specifically on items 8 and 7, revealing the importance of using the peer tutoring strategy and setting specific roles to achieve the intended instructional objectives.

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Table 2. Means and Standard Deviations for All Items in the Peer Tutoring Strategy.

Dimension	Item No.	Means (M)	Standard Deviation (SD)
Peer Tutoring Strategy	1	3.43	0.56
	2	3.45	0.56
	3	3.43	0.57
	4	3.41	0.66
	5	3.24	0.72
	6	3.29	0.60
	7	3.47	0.55
	8	3.51	0.53
	9	3.32	0.63
	10	3.38	0.59
	11	3.24	0.64
	12	2.94	0.75
	Overall	3.34	0.39

As presented in Table 3, the overall mean ratings for participants on the 10 items focusing on the JIGSAW Cooperative Learning Strategy dimension of 3.34 was obtained, with a standard deviation of 0.39. The highest mean rating of 3.43, with a standard deviation of 0.55, was for both item 16, *"I encourage every individual of my students in cooperative learning groups to work as a one team solving intended problems in the classroom instructional activity"*, and item 19, *"I ask all students during practicing JIGSAW cooperative learning strategy to follow instructions that required distributing work equally among them in the classroom instructional activity"*. The lowest mean rating of 3.19 was obtained for item 13, *"I practice JIGSAW cooperative learning strategy in my classroom instructional activities included putting them in heterogeneous groups to achieve instructional objectives"*. In other words, special education teachers practiced the JIGSAW cooperative learning strategy at an acceptable level, specifically on items 16 and 19, pointing to the importance of using the JIGSAW

cooperative learning strategy and setting specific roles and instructions to achieve its intended instructional objectives.

Table 3. Means and Standard Deviations for All Items in the JIGSAW Cooperative Learning Strategy.

Dimension	Item No.	Means (M)	Standard Deviation (SD)
JIGSAW Cooperative Learning Strategy	13	3.19	0.60
	14	3.36	0.61
	15	3.35	0.66
	16	3.43	0.55
	17	3.35	0.65
	18	3.37	0.60
	19	3.37	0.59
	20	3.29	0.59
	21	3.30	0.66
	22	3.36	0.65
	Overall	3.34	0.44

### Results for Question (2)

Question (2) was: “Are there differences in the views of special education teachers towards using evidence-based constructivism instructional strategies with an effect size greater than 0.4 in the inclusion classrooms related to the independent variables of: nationality, age, education qualification, teaching experience, major, educational district, and school gender-type? And its relation to the research variables (JIGSAW cooperative learning strategy)”. To answer this question, the t-test and F test were used.

Differences between the demographic variables (nationality, education qualification, teaching experience, major, educational district, and school gender-type) and the peer tutoring strategy and JIGSAW cooperative learning strategy were found not to be statistically significant ( $p>0.05$ ). However, the results presented in Table 4 show significant differences ( $p<0.05$ ) between the JIGSAW

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cooperative learning strategy and the age variable of 24-26 years old. In other words, special education teachers aged 24-26 reported higher ratings than special education teachers aged 21-23 at a less than 0.05 level of significance, as indicated in Table 5.

Table 4. *Results of T-test for the Peer Tutoring Strategy and JIGSAW Cooperative Learning Strategy according to Age.*

Dimensions	Age	Sum of Squares	Df	Mean Square	F	Sig.
Peer Tutoring Strategy	Between Groups	0.66	3	0.22	1.47	.226
	Within Groups	21.73	146	0.15		
	Total	22.38	149			
JIGSAW Cooperative Learning Strategy	Between Groups	1.71	3	0.57	3.08	.029
	Within Groups	26.98	146	0.18		
	Total	28.69	149			
Total average	Between Groups	1.07	3	0.36	2.47	.064
	Within Groups	20.95	146	0.14		
	Total	22.02	149			

Table 5. *Results of Differences between Ages in the JIGSAW Cooperative Learning Strategy.*

Dimension	Age	Mean	Diff.	Sig.
JIGSAW Cooperative Learning Strategy	24-26 Years	3.43	0.302	0.01
	21-23 Years	3.13		

### Discussion

Study findings reveal that the 150 special education teacher participants varied in their use of the peer tutoring and JIGSAW cooperative learning strategies when teaching students with special educational needs. This fits with the effective size research studies outlined by Hattie (2008-2017). Below, each strategy is discussed in light of the current research results and other research findings.

#### **First: Peer Tutoring Strategy.**

Results for the peer tutoring strategy dimension indicated that special education teachers were using this strategy more than the JIGSAW cooperative learning strategy. Teachers were able to practice the peer tutoring strategy at an acceptable level when teaching students with SEN in Kuwait public education schools, specifically on items 8 and 7. This points to the importance of using the peer tutoring strategy and setting specific roles to achieve its intended instructional objectives when teaching SEN students, supporting findings from other research studies (Kroesbergen and Van Luit, 2003; Bowman-Perrott et al., 2013; Moyaert et al., 2019). However, statistically insignificant differences were found between the peer tutoring strategy dimension and all demographic variables, as supported by other research (Kroesbergen and Van Luit, 2003), indicating that peer tutoring is less effective than JIGSAW cooperative learning.

#### **Second: JIGSAW Cooperative Learning Strategy.**

Findings on the JIGSAW cooperative learning strategy dimension revealed that the special education teachers practiced the JIGSAW cooperative learning strategy at an acceptable level. They were professionally able to teach and benefit all SEN students, a finding supported by other research (Johnson et al., 1987; Rose, 1991; Byres and Rose, 2012; Babbage, 2013; Farrell, 2013; Iswan, 2021). However, special education teachers who practiced the JIGSAW cooperative learning strategy in educating SEN students were not statistically significant in terms of certain demographic variables (nationality, education qualification, teaching experience, major, educational district, and school gender-type), which is also

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supported to previous research findings (i.e., Abuhamda, Darmi, and Abdullah, 2020). This points to a lack of high-quality control-based studies on JIGSAW cooperative learning and SEN that demonstrate clear effect sizes.

### **Conclusion and Recommendations**

This study has highlighted the use of evidence-based constructivism instructional strategies with an effect size above 0.40 in educating SEN students in Kuwait's inclusion classrooms. Recommendations include the following.

First, all special education teachers need intensive training on the use of the JIGSAW cooperative learning strategy, especially those aged 21-23 who are beginning their teaching career. It is important to strengthen their knowledge and skills in using the JIGSAW cooperative learning strategy in educating SEN students in Kuwait's inclusion classrooms.

Second, continuing professional development (CPD) workshops and programs must be provided to all special education teachers in inclusion classrooms. This will enhance their knowledge and skills and improve teacher performance and outcomes for SEN student education in Kuwait.

Third, further intensive research is needed on the use and practice of evidence-based constructivism instructional strategies in general to investigate how its implementation may improve SEN students' learning and achievement in inclusive elementary schools. Specifically, it is important to investigate issues related to implementation of the JIGSAW cooperative learning strategy with SEN students in Kuwait. Doing so will determine which demographic variables have a high or low impact on special education teachers' practice of JIGSAW, and what effect sizes emerge from use of the JIGSAW cooperative learning strategy in educating SEN students.

Finally, teacher education programs in Kuwait must train pre-service teachers on the use of evidence-based constructivism instructional strategies, especially by those working in Kuwait's inclusion classrooms.

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