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Kindergarten teachers' knowledge level of developmentally appropriate practice in Jordan

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ABSTRACT

The researchers conducting this study explored kindergarten teachers' knowledge level of developmentally appropriate practice (DAP) in early years settings in Jordan. Data were collected from 180 kindergarten teachers working in Amman Governorate. A 37-item questionnaire was designed to reflect the concepts of DAP as presented in the National Association for the Education of Young Children guidelines. Results indicated that participating kindergarten teachers reported high knowledge level of DAP. Moreover, the results revealed statistically significant differences among kindergarten teachers based on some study variables; kindergarten teachers with specialisation related to early childhood education and with high academic qualification demonstrated a higher level of DAP than their counterparts without. Implications are also offered: they include developing early childhood teacher education programmes to emphasise DAP in pre-and in-service teacher education programmes.

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Developmentally appropriate practice; kindergarten teachers; early years education; kindergarten children

Introduction

Developmentally appropriate practice (hereafter referred as DAP) is a term coined by the National Association for the Education of Young Children (NAEYC) to refer to using knowledge about child development, including age, individual, social and cultural appropriateness, to make the best decisions during teaching to promote children's learning and development (National Association for the Education of Young Children 2009). DAP becomes one of the most influential frameworks in the early childhood literature as the most representative of 'best practices' in curriculum and instruction (Copple and Bredekamp 2009; Liu 2007; Suk Lee, Baik, and Charlesworth 2006). A rich body of research suggested that using DAP in the classroom has positive benefits for children (Dunn and Kontos 1997; Copple and Bredekamp 2009; National Association for the Education of Young Children 2009; Morni 2001; Ruto-Korir 2010; Gestwicki 2011), has strongly influenced the field of early childhood education (ECE) and becomes a paradigm in the field (Rentzou and Sakellariou 2011).

Jordan, is a small country with limited natural resources, has paid increasing attention to kindergarten education (institutions for children aged 3–6 years). The Jordanian Ministry of Education (MOE) embraced kindergarten within the basic stages of the Jordanian educational system, and established kindergarten classrooms in public schools. In 2015, there were about 1180 kindergarten classrooms attached to primary schools, joined by 16,000 children, who were educated by 1100 female teachers (MOE 2016). In 2004, an interactive national curriculum for kindergartens was launched jointly between the MOE and the National Council for Family Affairs. The curriculum was developed based on the recent theories of children's development as well as the basic principles of teaching

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children in early years. Despite this interest in the kindergarten education, research studies conducted in Jordanian context reported extensive use of narrowly academically based practice in Jordanian kindergarten education (Al-Khawaldeh et al. 2018; Haroun 2005; Ihmeideh 2006).

Research suggested that teachers often hold different knowledge levels, attitudes and beliefs regarding the actual attributes of DAPs and their usefulness in early years classrooms (Buchanan et al. 1998; Kim and Han 2015; Phillips 2004; Parker and Neuharth-Pritchett 2006; Liu 2007; Ruto-Korir 2010). The study reported here set out to explore kindergarten teachers' knowledge level of DAP and to find out the influence of some variables (i.e. type of kindergarten, area of specialisation, academic qualification and years of teaching experience) on their DAP knowledge level.

Theoretical underpinnings

DAP is rooted in the work of early childhood pioneers like Piaget and Vygotsky (Liu 2007; Gauvain and Perez 2015). NAEYC describes curriculum and instruction based on the following principles: (1) learning should be guided by children's level of cognitive and social development; (2) teachers should adapt instruction to the individual learning abilities and needs of each child and (3) instruction should be responsive to the demands of the social and cultural context (Copple and Bredekamp 2009; National Association for the Education of Young Children 2009). This perspective emphasises that children are active learners and they best learn through physical and social experiences to construct their own understandings of themselves and the world around them. Educators who work in accordance with the principles of DAP have focused their decisions in light of what they know about how children grow, the strengths of each child, their interests and the cultural and social context in which they live (Kostelink, Soderman, and Whiren 2004).

Programmes based on DAP have been characterised by many advantages, including a holistic approach to the child by concentrating on all developmental aspects; individualisation and adaptation; responding to the disparity that exists between children in their level of abilities and interests through various activities and games that relate to their lives, knowledge and past experiences; creating an exciting and flexible learning environment and giving children the opportunity to decide what and how they will learn (Copple and Bredekamp 2009; Gestwicki 2011). They also enable conducting the continuous individual evaluation of the children on one hand and the programme on the other, by using a variety of methods that depend on evaluating performance in real-life situations away from the use of standard evaluation tools and measures and develop a real partnership with the family, considering it as a cornerstone for supporting and promoting child learning (Suk Lee, Baik, and Charlesworth 2006).

Although DAP guidelines have achieved a canonical place in ECE, there are diverse interpretations and understandings of what DAP is, how to implement it and how important it is in relation to overall classroom practice (Smith 1997; Parker and Neuharth-Pritchett 2006; Shiakou and Belsky 2009). DAP is still widely influencing early childhood teacher preparation programmes, both at the pre-service and in-service level (Dunn and Kontos 1997; McMullen 1997; McMullen et al. 2006). One of the factors that determine the quality of teaching and learning process in general is teachers, as they are the ones who are responsible for implementing DAP. Early childhood teachers play a crucial role in children's development and learning. However, teachers often have different interests concerning teaching and have different teaching experience, area of specialisms and academic qualifications. Moreover, research into early years learning indicated that teachers' attitudes, beliefs or knowledge level have an influence on the quality of the teaching and learning process (Doliopoulou 1996; Vartuli 1999; Morni 2001).

A host of research indicate that there is a positive effect from the implementation of the principles of DAP to children's growth mentally, socially and emotionally (Dunn and Kontos 1997; Bredekamp and Copple 2009; Morni 2001; Ruto-Korir 2010; Gestwicki 2011). Children who have learned through this practice have gained higher degrees in science and social studies compared

to their peers who learned through a traditional programme. A study carried out by Huffman and Speer (2000) showed that children who have learned in DAP classroom learn to read more efficiently than children who have learned in the traditional way. In the same context, the Jambunathan, Burts, and Pierce's (1999) study showed that children who enrolled in DAP programmes have shown better skills in problem solving and have been more cooperative in playing or learning from peers who joined traditional programmes. The results of Jones and Gullo (1999) study also indicated that children who learned from DAP programmes have achieved better levels of social skills and acceptable social behaviour than children who have learned in other ways. Mohamed and Al-Qaryouti (2016) carried out a study about teachers' self-reported beliefs and practices about DAP in the context of Oman. They found that most of the teachers endorsed beliefs about child-initiated learning and integrated curriculum, and they also embraced practices related to broad-integrated activities.

Conversely, other studies showed a relationship between teachers' level of knowledge and their beliefs and educational practices. The results of Barlow and Cates' (2007) study indicated that teachers' beliefs affect the way their students perceive and their evaluation of their educational practices, and the practices of their peers on the other hand. The teachers' level of knowledge is also a critical factor in determining their acceptance of new ideas in education, and their level of enthusiasm for any proposed developmental programme.

Rentzou and Sakellariou (2011) conducted a study aimed at investigating kindergarten teachers' beliefs about and practices of DAP in Greece. The results showed that kindergarten pre-service kindergarten teachers favour DAPs both as far as their beliefs and practices are concerned. Teachers are reported higher scores in the DAP beliefs scale than in the DAP activities scale.

It should be noted that the application of the DAP principles requires much systematic and conscious effort by teachers. It requires recognition that learning at kindergarten stage is different to learning in subsequent school stages, and that the children at this stage differ in their characteristics from older children and adults. This awareness should then be translated into planning processes for pre-schoolers' learning. This requires all that the teacher knows about the general growth characteristics of the children of this stage, their individual characteristics and, finally, their social and cultural contexts.

On the other hand, children should be thought of as individuals and not as a homogenous group, although they share some common characteristics. However, there are certain developmental and cultural specificities for each of them that must be taken into consideration (Kostelink, Soderman, and Whiren 2004). Jerry (1992) believes that DAP requires teachers' awareness of what these practices are meant to be. As Ketner and Kenneth (1997) pointed out that the most important ingredient of active action in the preschool stage is that the preschool teacher has a clear and accurate understanding of the principles of DAP. Reviewing the literature has shown that the practice of kindergarten teachers is related to their awareness and is influenced by it (Clarke-Stewart 1987) and that teachers' knowledge of these practices is a support reflected in their convictions and beliefs to a larger extent (Richardson 1996).

Despite the fact that the field of teachers' views, knowledge, beliefs of DAP has been extensively researched in the west countries, to the best of the researchers' knowledge, limited studies on teachers' knowledge level about DAP has been researched in the Jordanian context (Betawi and Jabbar 2019). In Jordan, few studies were conducted in the field of DAP (Abu-Jaber, Al-Shawareb, and Gheith 2009). They investigated beliefs of Jordanian kindergarten teachers towards DAP. The results found indicated that teachers demonstrated high beliefs towards DAP on all study domains except for the establishing reciprocal relationships with families. Ten years later, Betawi and Jabbar (2019) explored the perceptions of pre-service teachers towards DAP. They found that pre-service teachers hold high perception of DAP and their perceptions were influenced by their internship experience and the seniority of study at the university. The current study is different from the previous studies conducted in Jordan in its aims, sample and the study domains. Therefore, it is important to explore teachers' knowledge level related

to what DAP might mean in different contexts in order to emphasise DAP in pre-and in-service teacher education programmes.

Study purpose

The implementation of DAP in early years classrooms depends on teachers' knowledge level and understanding of the principles of DAP. Therefore, the aim of this study is to find out kindergarten teachers' knowledge level of DAP in the Jordanian context, and the influence of a number of variables on their DAP knowledge level. Specifically, the current study sought to answer the following two questions:

1 What is the Jordanian kindergarten teachers' knowledge level towards the developmentally appropriate practice (DAP)?
2 Are there significant differences at in the Jordanian kindergarten teachers' knowledge level due to type of kindergarten (public/private), area of specialisation, academic qualification, years of teaching experience?

Significance of the study

This study is in response to the DAP perspectives which are related to child-rearing from birth to the age of eight. Many educators look at the programmes that are academically directed, believing that they are not developmentally appropriate for children, especially those that focus on direct reading, writing and arithmetic, rather than on promoting all areas of children's development. On the other hand, many educators are concerned about the apparent shift towards the direct and traditional learning styles of pre-schoolers, rather than learning that depends on educational play. There are also concerns about the high level of teacher-directed activities, at the expense of free learning activities. The work of Haroun's (2005) study, which analysed the national kindergarten curriculum issued by the Jordanian MOE, suggested that the vast majority of the curriculum activities are academically oriented. The focus of teacher-centred learning, rather than the child, is likely to reduce the child's learning opportunities and self-discovery.

There are indications that teachers' practices are related to their level of knowledge and understanding of education processes. In other words, there are signs that each teacher has a knowledge base that directs her practice. This helps to know kindergarten teachers' degree of awareness of appropriate educational practices for kindergarten children, as it is important in guiding their work and contributes to the construction of special programmes to modify their concepts towards these practices, and to train them to practice these skills. It can be said that any attempt to understand teachers' practices with a view to their evaluation and development should be based on a deep understanding of the theoretical foundations adopted by teachers and starting from them. Results of the current study will be useful for Jordanian policy-makers and practitioners in the field to inform decisions about kindergarten education in the country. Therefore, this study was designed and carried out.

The study context

The current study was conducted in Jordanian ECE context. The Jordanian educational system essentially comprises three phases administered by the MOE: Kindergarten Education (4–6 years), Basic Education (6–16 years) and Secondary Education (16–18 years). Kindergarten Education is still not listed in the mandatory educational system in the Jordanian educational system as it is mainly run by the private sector, charities and voluntary societies (United Nations Educational, Scientific, Cultural Organization [UNESCO] 2007). The MOE runs limited number of public kindergarten classes linked

with primary schools in some remote areas. The ministry implements its national curriculum in the public kindergartens, while the curriculum implemented in the private kindergartens is different according to the type of kindergarten (e.g. international, bilingual, etc). A 2-year phase of kindergarten education consists of two classes: KG1 (children aged 4–5 years) and KG2 (children aged 5–6 years). In compliance with the MOE's rules and regulations, children at the age of at least 3 years and 8 months are allowed to enter kindergarten. The ratio of children to teachers range from 1:25 to 1:30.

In the kindergarten stage, children learn the 'three Rs': reading, writing and arithmetic. In addition to these primary subjects, they learn other fundamental subjects, such as religious education, the Arabic language, science, social studies, mathematics, music, arts, handicrafts, physical education and English (Ihmeideh 2010). All staff working in kindergarten settings in Jordan, including teachers, are females. This is because in the Jordanian educational context female kindergarten teachers are considered better than male teachers in terms of understanding children's needs, dealing with and educating children (Ihmeideh, Al-Basheer, and Al-Momani 2008). Most of the classrooms are equipped with furniture and appropriate tools and materials, in addition to playground or play courts for children. The MOE directly supervises both public and private kindergartens.

Since the beginning of this decade, and as a result of the Jordanian government's keen interest in ECE, many specialised programmes in ECE in a number of Jordanian public and private universities were established to prepare an adequate number of kindergarten teachers to work in the kindergartens (Heyasat 2002). In addition to these pre-service teacher education programmes, the MOE developed professional development in-service programmes to promote kindergarten teachers' teaching skills. Very recently, the Jordanian government had announced its inclination to make kindergartens mandatory for children aged 5–6 as of September 2020 (Jordan News Agency 2019).

Methodology

Subjects

The participants in the study were 180 kindergarten teachers. They were selected from Amman governorate. The reason why Amman governorate was chosen because it represents the nature of the kindergartens in Jordan as Amman, the capital and largest city in Jordan, has both types of kindergartens (public and private) where other governorates have few numbers of public kindergartens. A total of 87 kindergarten teachers were from public kindergartens (representing 48.3% of the population), while 93 kindergarten teachers were from private sector (representing 51.7%), all of whom were female. Participants' age ranged from 24 to 38 ($M = 27.4$) years old. Initially, the kindergarten teachers were asked about their academic qualifications, area of specialisation and years of teaching experience. Based on the participants' responses, 96 of the participants held a diploma's degree (53.3%), 73 teachers had completed a bachelor's degree and 11 (6.1%) held a master's degree and more (graduate studies). Regarding their specialisation, a total of 79.4% of the sample had ECE-related specialisation, while 20.6% had ECE-unrelated specialisation. In terms of years of teaching experience, 95 teachers had less than 5 years of teaching experience, 64 of the sample had 5–10 years and 21 had more than 10 years of teaching experience. A total of 180 usable questionnaires were returned, resulting in an acceptable response rate of 96%.

Instrument

The instrument was drawn from a collection of previously developed instruments (Charlesworth et al. 1993; Burts, Buchanan, Charlesworth, & Jambunathan 2000; Hart, Burts, and Charlesworth 1997; Kim and Buchanan 2009). In this study, the questionnaire was used to collect information from kindergarten teachers regarding their knowledge level of DAP. Mainly, the questionnaire consisted of two

sections: (1) demographic information which contained questions about age, type of kindergarten, area of specialisation, academic qualifications and years of teaching experience and (2) DAP knowledge level which consisted of 37 items with three subscales: (1) *curriculum development and integration* (sample item: Teacher should integrate each child's home culture and language into the curriculum throughout the year), (2) teaching strategies (sample item: Teacher should provide a variety of learning areas with concrete materials such as writing center, science center, math center, etc.) and (3) *assessment* (sample item: Teacher observation is important as an evaluation technique). The questionnaire items were designed to reflect the concepts of DAP as presented in the revised 1997 NAEYC guidelines. Thus, questionnaire items reflect knowledge level of DAP. Kindergarten teachers were asked to respond to each item using a five-point Likert-type scale of responses, with 5 indicating strongly agree and 1 indicating strongly disagree.

Validity and reliability of the instrument

In order to ensure the validity of the questionnaire, it was handed out to a group of 10 referees specialising in ECE, Educational Psychology and Elementary Education. The questionnaire was also field tested with 20 kindergarten teachers prior to the implementation in the study. The researchers incorporated into the instrument development changes indicated by the referees and the pilot study. To assess the reliability of the instrument, an internal consistency coefficient for the instrument was performed using Cronbach's alpha method. The results revealed that the whole instrument was reliable at 0.86, representing a high-reliability coefficient. In addition, the first subscale (curriculum development and integration) was reliable at 0.85, the second subscale (teaching strategies) was reliable at 0.73 and the third subscale (assessment) was reliable at 0.75. These results mean that the reliability coefficients were satisfactory for the purpose of the study.

Procedures

Approvals from the MOE to carry out this study were obtained. Four research assistants were recruited to contact kindergartens, meet kindergarten teachers and collect consent forms from them. Moreover, participants were ensured confidentiality and anonymity. After delivering the questionnaires to the kindergarten teachers, the research assistants made an appointment to collect them after one week.

Analysis of findings

The study data were entered into SPSS programme and checked for accuracy. Individual items mean and standard deviation for the three subscales and the total were calculated. The *t*-test for the independent sample and the one-way analysis of variance (ANOVA) were used as the main statistical techniques in the study. Comparisons between kindergarten teachers based on the type of kindergarten (public kindergarten vs. private kindergarten) and specialisation (ECE-related specialisation vs. ECE-unrelated specialisation) were examined through *t*-test for two independent samples. In addition, comparisons between kindergarten teachers based on their academic qualifications (i.e. diploma degree, Bachelor's degree and graduate studies) and their years of teaching experience (short, medium and long experience) were examined through one-way ANOVA. The Scheffe *post hoc* test was utilised (if the ANOVA main effect was significant).

Table 1. Descriptive statistics of the subscales of the study instrument.

No.	Subscale	Rank	Mean	Standard deviation	Level of knowledge
1.	Curriculum development and integration	3	3.64	0.68	Moderate
2.	Teaching strategies	1	3.81	0.50	High
3.	Assessment	2	3.80	0.57	High
Total score			3.76	0.44	High

Study findings and discussion

Results pertaining to Research Question 1

Research Question 1 examines kindergarten teachers' level of knowledge about the DAP. Descriptive statistics, including means and standard deviations, were used. As presented in Table 1, the total mean score was 3.76 with a standard deviation of 0.44, indicating high level of DAP knowledge. In terms of the study domains, the highest level of DAP knowledge was 'teaching strategies' domain, with a mean of 3.81 and a standard deviation of 0.05. Next came 'assessment' domain, which had mean scores of 3.80 and a standard deviation of 0.57, indicating also high level of DAP knowledge. In the third and last rank came 'curriculum development and integration' domain, which had the mean score of 3.64 with a standard deviation of 0.68 and a moderate level of DAP knowledge.

The above-mentioned findings indicate that kindergarten teachers are aware of DAP in early years classrooms. This may reflect teachers' knowledge of the importance of teaching methods, assessment, and curriculum according to DAPs perspective because these domains have a significant impact on the development of children's learning and development. This finding is consistent with Copple and Bredekamp's (2009) views as they noted that teachers' belief is a major factor in selecting developmentally appropriate strategies, and that their knowledge of children's development and learning requires them to choose the appropriate teaching strategies, assessment and curriculum. In this regard, Hsiac (2003) noted that early childhood teachers who lack knowledge of child development and learning methods are unable to make correct decisions about DAPs.

In Jordan, kindergarten teachers teach according to the curriculum that embrace partly DAP perspective and they often attended training sessions that focus on DAP perspective. Thus, it is not surprising that the kindergarten teachers have shown high knowledge level of DAP, practically DAP exists in response to traditional practices that have prevailed for decades in preschool education. This finding is consistent with those of the work of Obidike and Enemuo (2013), who noted that teachers using DAPs are seeking access to goals that provide better education for children.

It is well-established that DAP achieves an advanced level of learning for children. This is what the participating teachers experienced during their work with children. Perhaps many researchers have found great support for children's learning methods according to many teachers' DAPs (Abu-Jaber, Al-Shawareb, and Gheith 2009; Doliopoulou 1996).

Results pertaining to Research Question 2

Research Question 2 is concerned with the significant differences in the teachers' level of knowledge about DAP and the following demographics information of teachers: (1) type of kindergarten, (2) academic qualification, (3) area of specialisation and (4) years of teaching experience. The *t*-test for the independent samples and one-way ANOVA were used to answer this research question.

Kindergarten teachers participated in this study work in two different types of kindergartens: public kindergartens ($n = 42$) and private kindergartens ($n = 12$). *T*-test was used to determine whether teachers' knowledge level of DAP differs based on the type of kindergarten. The results showed that there were no statistically significant differences among kindergarten teachers in all domains and in the total that are attributed to type of kindergarten (public vs. private). For curriculum development and integration $t(178) = 0.180$, $p = .857$; teaching strategies $t(178) = -0.495$, $p = .621$; assessment $t(178) = -1.042$, $p = .299$ and the total $t(178) = -0.613$, $p = .541$.

Researchers assume that teachers working in public kindergarten may show high level of DAP knowledge than those working in private kindergartens. This result was unexpected because the public kindergartens in Jordan are more equipped to apply DAP than kindergartens in the private sector. In particular, governmental sector teachers underwent advanced training courses in ECE and apply the interactive national curriculum which was designed based on DAP perspectives. This may be caused by the same circumstances in both public and private kindergartens in terms of teachers' academic qualifications, specialisation and the years of teaching experience. The absence of significant differences between teachers working in both sectors may explain that

DAPs are more a philosophy than a curriculum and that the belief in this philosophy requires systematic preparation starting in universities (pre-service) and extending through the years of actual teaching (in-service). The results differed to Ihmeideh's (2010) study, which indicated that in the public sector in Jordan, kindergarten teachers' instructional practices in the use of technology for the development of reading and writing were more developmentally appropriate than their counterparts in the private sector.

With regard to the areas of specialisation, kindergarten teachers in this study were divided into two categories: teachers who have specialisation related to ECE and teachers who have specialisation unrelated to ECE. The results of the *t*-test showed significant differences at the 0.05 alpha level between kindergarten teachers with ECE-related specialisation and teachers without. As shown in Table 2, these differences were found on the curriculum development and integration domain $t(178) = 2.423$, $p = .016$; teaching strategies domain $t(178) = 2.253$, $p = .025$ and the total $t(178) = 2.237$, $p = .027$ in favour of teachers with ECE-related specialisation. However, there were no significant differences at the 0.05 alpha level on the assessment domain $t(178) = 0.562$, $p = .575$.

These differences came in favour of ECE-related specialisation, as teachers who have an academic qualification in the field of ECE are able to know the best practices in early years education. This result is consistent with the studies of Snider and Fu (1990) and Vartuli (1999), who found that the teachers specialising in ECE had beliefs related to the best practices more than the teachers with other academic qualifications. This result is also consistent with the recommendations made by the NAEYC (National Association for the Education of Young Children 2009), which required policymakers to request specialised preparation in ECE and to consider it as a prerequisite for those who wanted to work with young children.

With regard to years of teaching experience variable, the one-way ANOVA revealed no significant differences at the 0.05 alpha in the level of knowledge of teachers on the total score, nor on the three subscales. For curriculum development and integration $F(2, 177) = 2.552$, $p = .081$; teaching strategies $F(2, 177) = 3.035$, $p = .051$; assessment $F(2, 177) = 1.838$, $p = .162$ and the total $F(2, 177) = 2.605$, $p = .077$.

Researchers assume that experienced teachers are more likely to hold high knowledge level of DAP that those with short teaching experience. However, the results did not confirm that assumption. The researchers attributed the reason for the absence of significant differences between the teachers with different years of teaching experiences to the fact that the working conditions of the teachers are similar in terms of similar conditions of training during the service and the supervisory visits that may contribute to the formation and development of their experiences. This result differs to Doliopoulou's (1996) study results, indicating that teachers with long years of teaching experience are more knowledgeable in DAP.

With regard to the academic qualification variable, the one-way ANOVA revealed significant differences at the 0.05 alpha in the knowledge level of kindergarten teachers on the total score of the scale, and on the three subscales. As shown in Table 3, the differences were found as follows: curriculum development and integration $F(2, 177) = 5.293$, $p = .006$; teaching strategies $F(2, 177) = 4.003$, $p = .021$; assessment $F(2, 177) = 4.370$, $p = .014$ and the total $F(2, 177) = 7.696$, $p = .001$.

Table 2. Results of the *t*-test according to teachers' specialisation.

Subscale	Specialisation	No.	Mean	St. D.	*t*	*p*
Curriculum development and integration	Specialisation related to ECE	143	3.7028	.69596	2.423	.016
	Specialisation unrelated to ECE	37	3.4027	.56543		
Teaching strategies	Specialisation related to ECE	143	3.8377	.50008	2.253	.025
	Specialisation unrelated to ECE	37	3.6335	.45487		
Assessment	Specialisation related to ECE	143	3.8160	.57492	.562	.575
	Specialisation unrelated to ECE	37	3.7565	.57479		
Total	Specialisation related to ECE	143	3.7936	.44722	2.237	.027
	Specialisation unrelated to ECE	37	3.6141	.38277		

Table 3. Results of one-way ANOVA according to teachers' academic qualification.

Domain	Source of variances	Sum of Squares	Degree of freedom	Mean square	*F*	*p*
Curriculum development and integration	Between groups	4.680	2	2.340	5.293	.006
	Within groups	78.256	177	0.442		
	Total	82.936	179			
Teaching strategies	Between groups	1.912	2	0.956	4.003	.020
	Within groups	42.274	177	0.239		
	Total	44.186	179			
Assessment	Between groups	2.773	2	1.386	4.370	.014
	Within groups	56.160	177	0.317		
	Total	58.933	179			
Total	Between groups	2.770	2	1.385	7.696	.001
	Within groups	31.853	177	0.180		
	Total	34.623	179			

In order to test the significance of the differences among the different levels of the academic qualification, Scheffe *post hoc* test was administrated. The differences were significant between teachers with graduate studies and teachers with college community diploma on the one hand, and between teachers with graduate studies and those with bachelor's degree on the other hand in favour of kindergarten teachers with graduate studies. In sum, teachers, who hold a higher academic qualification (graduate studies), are more likely to have high level of DAP knowledge more than their counterparts with bachelor's degree and diploma degree. This result is due to the fact that teachers with higher academic qualifications are exposed to advanced theories in the children's learning and development, which helps to formulate appropriate practices for growth in their minds. This result is consistent with that of Ihmeideh's (2006) study, which indicated that kindergarten teachers who hold postgraduate qualifications believe in developmentally appropriate literacy practices more than teachers who have minimum academic qualifications, such as a diploma.

Implications and recommendations

Results of the present study suggest that participating kindergarten teachers reported high scores in the DAP knowledge level. Furthermore, participants with ECE-related specialisation and with high academic qualification showed higher level of DAP knowledge than their counterparts with ECE-unrelated specialisation and with low academic qualifications. It seems that Jordanian kindergarten teachers show high knowledge level of what westerners view as DAP. The importance of the DIP attitudes, knowledge and beliefs has also been reported by many researchers (Copple and Bredekamp 2009; Dunn and Kontos 1997; Kim and Han 2015; Liu 2007; Morni 2001; Rentzou and Sakellariou 2011; Ruto-Korir 2010; Suk Lee, Baik, and Charlesworth 2006).

Based on the findings of the study, the researchers suggested a number of practical and theoretical recommendations. From the practical perspective, early childhood programmes should focus on preparing kindergarten teachers to use DAP in their classes. Pre-service programmes in Jordanian universities, colleges and institutions should offer courses related to the principles of DAP. It would be useful also if the MOE provided the teachers with in-services programmes DocuSign on the principles of DAP. Promoting teachers holding college community diploma to obtain high academic qualifications. Public and private kindergartens should not appoint kindergarten teachers with ECE-unrelated specialisation. From the theoretical perspective, further research should focus on conducting studies to verify the extent to which kindergarten teachers implement DAP in their actual practices.

Reviewing of literature on teachers' beliefs and practices regarding DAP suggested that teachers hold DAP beliefs, attitudes or knowledge more in their philosophy than in their teaching practices (Burts et al. 1993; Charlesworth et al. 1993; Dunn and Kontos 1997; Kim and Han 2015; Rentzou and Sakellariou 2011; Ruto-Korir 2010; Suk Lee, Baik, and Charlesworth 2006). Thus, conducting

field studies to identify the teachers' DAP knowledge level and their classroom practices regarding DAP is also recommended. Finally, the researchers suggested expanding studies that explore DAP in Jordan, and encourage researchers to conduct comparative studies between the Jordanian environment and other regional and global environments.

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References

Abu-Jaber, M., S. Al-Shawareb, and E. Gheith. 2009. "Kindergarten Teachers' Beliefs toward Developmentally Appropriate Practice in Jordan." *Early Childhood Education Journal* 38 (1): 65–74.

Al-Khawaldeh, M., A. Alelaimat, N. Al-Zyoud, M. Al-Masa'deh, and M. Mu'tasem. 2018. "The Effectiveness of Three Types of Kindergarten Curricula in Promoting National Consciousness Among the Jordanian Kindergarten Children." *International Journal of Humanities and Social Science* 8 (11): 65–74.

Barlow, A., and J. Cates. 2007. "The Answer is 20 Cookies: What is the Question?" *Teaching Children Mathematics* 13 (5): 252–261.

Betawi, B., and S. Jabbar. 2019. "Developmentally Appropriate or Developmentally Inappropriate, That's the Question: Perception of Early Childhood Pre-Service Teachers at The University of Jordan." *International Journal of Adolescence and Youth* 24 (1): 40–50.

Buchanan, T., D. Burts, J. Binder, V. White, and R. Charlesworth. 1998. "Predictors of the Developmental Appropriateness of the Beliefs and Practices of First, Second, and Third Grade Teachers." *Early Childhood Research Quarterly* 13 (3): 459–483.

Burts, D. C., T. K. Buchanan, R. Charlesworth, and S. Jambunathan. 2000. *Rating Scale for Measuring the Degree of Developmentally Appropriate Practice in Early Childhood Classrooms (3-5 Year Olds)*. Baton Rouge, LA: Louisiana State University College of Education.

Burts, D., C. Hart, R. Charlesworth, D. DeWolf, J. Ray, K. Manuel, P. O. Fleege. 1993. "Developmental Appropriateness of Kindergarten Programs and Academic Outcomes in First Grade." *Journal of Research in Childhood Education* 8 (1): 23–31.

Charlesworth, R., C. H. Hart, D. C. Burts, R. H. Thomasson, J. Mosley, and P. Fleege. 1993. "Measuring the Developmental Appropriateness of Kindergarten Teachers' Beliefs and Practices." *Early Childhood Research Quarterly* 8: 255–276.

Clarke-Stewart, K. 1987. "Predicting Child Development from Child Care Forms and Features: The Chicago Study." In *Quality in Child Care: What Does Research Tell Us?*, edited by D. A. Phillips, 21–24. Washington, DC: National Association for the Education of Young Children.

Copple, C., and S. Bredekamp. 2009. *Developmentally Appropriate Practice in Early Childhood Programs*. 3rd ed. Washington, DC: NAEYC.

Doliopoulou, E. 1996. "Greek Kindergarten Teachers' Beliefs and Practices: How Appropriate Are They?" *European Early Childhood Education Research Journal* 4 (2): 33–48.

Dunn, L., and S. Kontos. 1997. "What Have We Learned About Developmentally Appropriate Practice?" *Young Children* 52 (5): 4–13.

Gauvain, M., and S. Perez. 2015. "Cognitive Development in Cultural Context." In *Handbook of Child Psychology and Developmental Science, Vol. 2: Cognitive Processes*, edited by R. M. Lerner, L. Liben, and U. Müller, 854–896. Hoboken, NJ: Wiley.

Gestwicki, C. 2011. *Developmentally Appropriate Practice Curriculum and Development in Early Education*. Wadsworth: Cengage Learning.

Haroun, R. 2005. "An Analytical Study of 'The Interactive National Curriculum: The Modern Foundations of Raising Kindergarten Children and Their Education'." *Child and family Conference*. Jordan: The Hashemite University, Zarqa.

Hart, C., D. Burts, and R. Charlesworth. 1997. "Integrated Developmentally Appropriate Curriculum from Theory and Research to Practice." In *Integrated Curriculum and Developmentally Appropriate Practice: Birth to Age Eight*, edited by C. H. Hart, D. C. Burts, and R. Charlesworth, 1–28. Albany, NY: SUNY Press.

Heyasat, A. 2002. *Reinforcement the Teaching Accessible Through Teaching in Early Childhood Education Stage*. Amman: Ministry of Education.

Hsiac, W. 2003. "Comparison of Montessori and Non-Montessori Teachers' Beliefs About Developmentally Appropriate Practices." Unpublished EdD. diss., University of Northern Colorado, Colorado.
Huffman, L., and P. W. Speer. 2000. "Academic Performance among At-risk Children: The Role of Developmentally Appropriate Practices." *Early Childhood Research Quarterly* 15 (2): 167–184.
Ihmeideh, F. 2006. "An investigation into the Development of Arabic Literacy in Kindergartens in Jordan." Unpublished Ph.D. diss., The University of Huddersfield, UK.
Ihmeideh, F. 2010. "The Role of Computer Technology in Teaching Reading and Writing: Pre-school Teachers' Beliefs and Practices." *Journal of Research in Early Childhood* 24 (1): 60–76.
Ihmeideh, F., A. Al-Basheer, and I. Al-Momani. 2008. "Jordanian Student Teachers' Perceptions of Teaching Writing in Kindergartens during their Field Training Experience." *European Journal of Teacher Education* 31 (4): 403–417.
Jambunathan, S., D. Burts, and S. Pierce. 1999. "Developmentally Appropriate Practices as Predictors of Self-Competence among Pre-schoolers." *Journal of Research in Childhood Education* 13 (2): 167–174.
Jerry, A. 1992. "Issues in Developmentally Appropriate Practice and Individual Differences." *Journal of Instructional Psychology* 19 (2): 71–79.
Jones, I., and D. Gullo. 1999. "Differential Social and Academic Effects of Developmentally Appropriate Practices and Beliefs." *Journal of Research in Childhood Education* 14 (1): 26–35.
Jordan News Agency. 2019. *PM Reveals Government Plans to make Kindergarten Mandatory in 2020*. Retrieved September 15, 2019, from http://petra.gov.jo/Include/InnerPage.jsp?ID=17283&lang=en&name=en_news.
Ketner, C., and E. Kenneth. 1997. "Relationship between Teacher Theoretical Orientation to Reading and Endorsement of Developmentally Appropriate Practice." *Journal of Educational Research* 90 (4): 212–221.
Kim, K.-R., and T. K. Buchanan. 2009. "Teacher Beliefs and Practices Survey: Operationalising the 1997 NAEYC Guidelines." *Early Child Development and Care* 179 (8): 1113–1124.
Kim, K., and H. Han. 2015. "Understanding Early Childhood Teachers' Beliefs and Self-Stated Practices about Social Competence Instructional Strategies in the Context of Developmentally Appropriate Practice: A Comparison of Preservice and in-Service Teachers in the United States." *European Early Childhood Education Research Journal* 23 (4): 476–496.
Kostelink, M., A. Soderman, and A. Whiren. 2004. *Developmentally Appropriate Curriculum: Best Practices in Early Childhood Education*. New Jersey: Merrill Prentice Hall.
Liu, H. 2007. "Developmentally Appropriate Beliefs and Practices of Public and Private Kindergarten Teachers in the United States and Taiwan." PhD diss. thesis, University of Texas, TX.
McMullen, M. 1997. "The Effects of Early Childhood Teacher Education on Self Perceptions and Beliefs about Developmentally Appropriate Practices." *Journal of Early Childhood Teacher Education* 18: 55–68.
McMullen, M., J. Elicker, G. Goetze, H. Huang, S. Lee, C. Mathers, and H. Yang. 2006. "Using Collaborative Assessment to Examine the Relationship between Self-Reported Beliefs and the Documentable Practices of Preschool Teachers." *Early Childhood Education Journal* 34 (1): 81–91.
Ministry of Education (MOE). 2016. *The Educational Statistical Report for the Scholastic Year 2004/2005. The General Directorate for Educational Planning*. Amman: The Department of Statistics.
Mohamed, A., and I. Al-Qaryouti. 2016. "The Association between Preschool Teachers' Beliefs and Practices about Developmentally Appropriate Practices." *Early Child Development and Care* 186 (12): 1972–1982.
Morni, H. 2001. "The Quality of Teaching and Learning Processes in Brunei Preschools." Unpublished PhD Thesis, University of Exeter, UK.
National Association for the Education of Young Children. 2009. *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age Eight. A Position Statement of the National Association for the Education of Young Children*. Retrieved May 3, 2019, from www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/PSDAP.pdf.
Obidike, N., and J. Enemuo. 2013. "The Role of Teachers of Young Children in Ensuring Developmentally Appropriate Practice in Early Childhood Education Curriculum Implementation." *Journal of Emerging Trends in Educational Research and Policy Studies* 4 (5): 821–826.
Parker, A., and S. Neuharth-Pritchett. 2006. "Developmentally Appropriate Practice in Kindergarten: Factors Shaping Teacher Beliefs and Practice." *Journal of Research in Childhood Education* 21 (1): 65–78.
Phillips, C. 2004. "'Appropriate' Kindergarten Instruction: Beliefs and Practices of Early Childhood Educators." PhD diss., Miami University, Miami, FL.
Rentzou, K., and M. Sakellariou. 2011. "Greek pre-Service Kindergarten Teachers' Beliefs About and Practices of Developmentally Appropriate Practices in Early Childhood Education." *Early Child Development and Care* 181 (8): 1047–1061.
Richardson, V. 1996. "The Role of Attitudes and Beliefs in Learning to Teach." In *Handbook of Research on Teacher Education*, edited by J. Sikula, 243–251. New York, NY: MacMillan Library Reference.
Ruto-Korir, R. 2010. "Preschool Teachers' Beliefs of Developmentally Appropriate Educational Practices." PhD thesis, University of Pretoria, Pretoria.
Shiakou, M., and J. Belsky. 2009. "Exploring Effects of Developmentally Appropriate Practices in Cyprus." *Early Education and Development* 20 (4): 565–583.

Smith, K. 1997. "Student Teachers' Beliefs about Developmentally Appropriate Practice: Pattern, Stability, and the Influence of Locus of Control." *Early Childhood Research Quarterly* 12 (2): 221–243.

Snider, M., and V. Fu. 1990. "The Effect of Specialized Education and Job Experience on Early Childhood Teacher's Knowledge of Developmentally Appropriate Practice." *Early Childhood Research Quarterly* 5 (1): 69–78.

Suk Lee, Y., J. Baik, and R. Charlesworth. 2006. "Differential Effects of Kindergarten Teachers' Beliefs about Developmentally Appropriate Practice on Their use of Scaffolding Following Inservice Training." *Teaching and Teacher Education* 22: 935–945.

UNESCO. 2007. *Policy Brief on Early Childhood*. Retrieved March 21, 2018, from http://unesdoc.unesco.org/images/0015/001515/151548E.pdf.

Vartuli, S. 1999. "How Early Childhood Teacher Beliefs Vary Across Grade Level." *Early Childhood Research Quarterly* 14 (4): 489–514.

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