

**The effects of different types of pre-school curricula on
some aspects of childrens experience and development
in Saudi Arabia**

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Abstract

This paper presents a short-term longitudinal study concerning the effect of different approaches to the Newly Developed Curriculum (NDC) on some aspects of child development. It studies children's progress during their two years of pre-school experience.

The sample consisted of 230 children in the pre-test who were starting pre-school, and 206 of these remained until the end of the study. A sample of 14 pre-schools was selected which were varied in their application of the NDC. The method was a quasi-experimental design involving pre and post-testing measures. The data was collected over the last two years in pre-school with approximately 17 months interval between tests. Assessments were made on the children's cognitive and social/behavioral development. The results showed that there were significant differences between pre-schools with high level of application of the NDC and pre-schools with a low or poor level of application of the NDC. These differences existed in aspects of children's experience as measured by observational and interview methods. There were also some differences in the children's development related to differences in the application of the NDC.

Introduction

Before 1994, there was no official curriculum for early childhood education in Saudi Arabia. Pre-school centres used to design their own curriculum depending on the beliefs of the people who ran these centres and mostly it was based on the direct-teaching method with a lot of academic activities. In 1994 the General Presidency of Girls Education established an official curriculum for early childhood education in Saudi Arabia. The curriculum was designed with a heavy focus on each individual child's total development in accordance with her/his modes of learning and creative self-development. It was called 'The Newly Developed Curriculum for Early Childhood Education'(NDC) or 'Self-Learning Curriculum'. It was based on several educational theories that had been developed in Western cultures that emphasized the interactive self-learning approach in the education of young children (Samadi and Marwa, 1991). Although the new curriculum is the official curriculum for all pre-schools the only pre-schools that strictly adhere to the curriculum are the government ones. The private pre-schools are varied in their application of the NDC. Some of them apply the NDC and add more academic activities; some do not apply it or apply it in a poor way and stick to the direct-teaching methods with academic activities.

However, in a rapidly changing society like Saudi Arabia, there is a dilemma between clinging to traditions and adopting new models of educational approach. Resistance to change can be seen not only among teachers who are reluctant and afraid of losing their control over children's learning, but also among many parents who believe that the new approach of active learning does not meet their goals and expectations in relation to their

children's pre-school education. Some parents are actually pressuring their children's pre-school to return to a traditional authoritative teacher-directed model.

In Saudi Arabia the controversy about these two types of curricula is ongoing. Many educators and parents believe in the academic way of teaching children. Most people in Saudi Arabia expect the pre-school programme to ensure children's readiness for elementary school. There is a lack of knowledge concerning issues such as the importance of social/ emotional development of young children, the importance of learning through play, the risk of damaging the disposition to be a learner.etc. The situation, in my view, requires educators to conduct a comprehensive scientific study on the effectiveness of these different types of curriculum.

The Curriculum Debate

The ongoing debate in KSA between those who favour a traditional curriculum and those who favour the NDC is an example of the " curriculum wars" going on in many areas of the world and for much of education. These debates are most pronounced in early years education. Katz (1999) describes how, half a century ago, Dorothy Gardner (1942) conducted a comparative study of two nursery schools to investigate debate surrounding curriculum and teaching methods. The approaches of the two schools differed greatly, with one, 'School A' emphasizing creativity and spontaneity in play. The second, 'School B', focused more on a formal style of teacher directed activities. Katz equates the two schools' styles to the contemporary descriptors of 'developmentally appropriate practice' (School A), and 'academic' (School B). However, Gardner's findings failed to resolve the debate, and although she found in favour of school A's 'developmentally

appropriate practice', the merits of these and other approaches to the provision of a pre-school curriculum have been debated ever since.

Many definitions are now used to describe these different practices. For example some researchers describe them as: academic or instructivist (developing skills in literacy and numeracy); and active/interactive or constructivist (developing active construction of knowledge). The active method is in contrast to the academic method (Katz, 1999). It has been found that through interactive activities with others (adults and peers) and through interacting with stimulating materials and surroundings, children learn most effectively (Bruner; 1999, Wood and Bemmett, 1999). Although academic teacher-led curricula have been shown to produce fairly good results in short term standardised tests, in the long term they produce disappointing results, and may even be counterproductive to the child's developmental progress (Schweinhart and Weikart, 1997; Marcon, 1995). Longitudinal studies demonstrate the need for curricula and teaching to be designed to 'optimise the simultaneous acquisition of knowledge, skills, desirable dispositions, and feelings' (Marcon, 1995). Bandura *et al* (1999) also point out that students who feel inadequately successful in an 'academic' curriculum may perceive themselves as 'stupid' and adapt their behaviour accordingly.

Also as Katz (1999), has pointed out a strong academic approach may undermine the disposition to use the knowledge and skills so intensely instructed. Now many pre-schools try to combine these different methods by providing contexts for the intellectual and social/emotional development by using project work to help children make meaningful and functional use of the academic skills.

Katz (1999) mentioned that most educators and parents agree that children should learn whatever will ultimately enable them to become healthy, competent, productive, and contributing members of their communities. It is a shared goal of both early childhood educators and parents to make children enter school ready to learn. Marcon (2002) indicated that this goal of school readiness is widely shared among early childhood educators, parents, and policy makers but the strategies for achieving this goal vary greatly.

In a recent article very relevant to the curriculum debates in Saudi Arabia, Katz (1999) mentioned that there are several factors that may account for increasing pressure to introduce children to academic learning as early as the pre-school and kindergarten years. One factor is ‘the increasing demand and widening exception that pre-school and kindergarten programmes ensure children’s readiness for the next grade or class level’. She goes on to explain that ‘This phenomenon is part of a traditional tendency at every level of education to push down curriculum expectations from older to young children’. Another factor listed by Katz may be that ‘the traditional importance given to spontaneous play as part of young children’s natural ways of learning may seem less urgent today than half a century ago, when for most children, opportunities for play were less plentiful than today, especially in the home’ (Katz, 1999).

In a significant study, Marcon (1999) compared the effects of three different types of pre-school: child-initiated, academically directed, and a “combination” approach, on children’s development. Findings indicated that children whose pre-school experiences had been child-initiated demonstrated greater mastery of basic skills at the end of pre-school than did children in programmes where academic skills were emphasized and

directly taught. Children in the “combination” model did significantly poorer on all measures except self-help and development of social coping skills compared to children in the other two models. A follow up study for the same children in their third and fourth year of primary school by Marcon (2002) found that there were no significant differences in academic performance of children who had experienced three different pre-school models in third grade. By the end of the fourth grade children whose pre-school experience had been academically directed had significantly lower grades compared to children who had attended child-initiated pre-school classes. Marcon explained the decline of the academic performance of the children from the academically directed programme as due to the new demands characteristic of the later elementary school grades. In the first three years of the school, children are learning the mechanics of reading. It is in the later grades (from Grade 4 onwards), that children must not only read, but comprehend. As children advance through the school, they must use their own initiative to organise their own learning, and begin to reason and face more abstract concepts, alone. This move away from a didactic model may result in a decrease in performance for children from the academically directed programme. It is therefore at this point that motivation and self-initiated learning become crucial for children’s later school success. She mentions that this is the point at which Elkind (1987) and Zigler (1987) are worried that short-term academic gains produced by overly didactic, formal instructional practices will be offset by the long-term stifling of children’s motivation. According to developmentalist Constance Kamii (1975 as cited in Marcon, 2002), such an approach produces passive students who wait to be told what to think next. Therefore, it is not really surprising that children whose pre-school experience may have curtailed

initiative would find the transition to the later elementary school grades more difficult. The foundation of critical thinking may be found in early childhood experiences that foster curiosity, initiative, independence, and effective choice.

Research on the long-term effects of various curriculum models suggests that the introduction of academic work into the early childhood curriculum yields fairly good results on standardised tests in the short term but may be counterproductive in the long term (Schweinhart and Weikart, 1997). Ramey and Ramey (2002) highlighted specific findings from several pre-school programmes. First they emphasised the need for early childhood research to shift from the traditional questions of whether the development of high risk children can be changed through pre-school experience to other questions concerning the relative influence of different types of programmes including practical questions concerning age of onset, intensity and duration as well as all the effects of various specific educational curricula. Their study followed children from pre-school age until age 21. Their treatment group of children received a high quality pre-school education which had features that met the recommendations of the National Association for the Education of Young Children. These recommendations emphasise child-initiated activities. The treatment group had a significantly higher academic achievement score in both reading and mathematics at all ages from 8-21. Not only they did have higher scores on intellectual and academic measures as young adults, they were also more likely to have attained more years of total education, were three times more likely to attend college, and showed a reduction in teenage births. By age 15 they were less likely to be retained in grade or placed in special education. Thus, the cognitive benefits that began with a good pre-school education better prepared these high risk children for later life.

Finally Katz (1999) suggested that both sides i.e. the instructive and constructive underemphasize and undervalue a third option - namely, curriculum and teaching methods that address children's intellectual development as distinct from the instructive emphasis on academic learning and constructive emphasis on children's play and self-initiated learning. Katz explained that constructive theory does not neglect children's intellectual development. However, constructive theory is some times misinterpreted by people who apply it. They do not fully appreciate the need to stimulate the child's motivation to learn in order to produce enquiring minds in young children.

Methodology:

Aims of the research

The aims of the research are as follows:

- 1) To study variations in the application of the Newly Developed Curriculum (NDC) and its relationship with variations in aspects of child development;
- 2) To compare the educational environment in various types of pre-school which vary in their application of the NDC;
- 3) To suggest some implications and recommendations for early childhood education in Saudi Arabia.

Statement of the problem: Research hypotheses

To date no research has been developed to show the effects of different curriculum practice in pre-school on aspects of early childhood development in Saudi Arabia. This empirical study revolves around these hypotheses:

- 1- It was predicted that pre-schools centres with greater application of the Newly Developed Curriculum provide a more favourable environment for early childhood development than those with lower application of the NDC.
- 2- It was predicted that the children attending pre-schools with greater application of the NDC would have greater improvement in the measured aspects of child development than those children attending pre-schools using a lower application of the NDC.

Method:

Design:

The investigation was conducted over a period of two years, using a quasi-experimental design with pre and post-test measures. This study investigates the impact of the effects from different pre-school settings that vary in their application of the Newly Developed Curriculum on several measures of child development in Riyadh City. Features of the pre-school environment in all settings were also considered. This study uses the notion of progress where the progress over time is taken into account through having a pre-test and a post-test. This is in addition to considering other factors.

Sample:

Private pre-schools were chosen for study because there are wide variations in the quality of their programmes, activities, staff qualifications and facilities. The sample is 230 children at pre-test, and 206 Post-test. The sample children were in 14 pre-school centres. For the pre-school centres all children fitting the criteria for the study were chosen. The given criteria were:

1- children aged 4-5 years

2- Saudi children

These two criteria were used:

- 1) To enable the sample to be homogeneous regarding these characteristics, thus enabling the pre- school pattern to be studied without uncontrolled variation as this variation might affect the results.
- 2) 4-5 years is the major age of pre-school children.

All children who fitted these criteria were chosen from a class in each school, where schools only had one class for that age group. In big schools with more than one class for this age group one class was chosen randomly, and all children fitting the criteria in the class were selected. There were 230 children: 116 female and 114 male. The range of children's ages was between 3 years and 9 months and 4 years and 10 months; The social background of the children was fairly homogeneous because all schools were private pre-schools for middle to upper class children.

Procedure for collecting information from pre-school centres:

The pre-school environment was assessed using the following instruments:

- 1- Application of the NDC Scale (ANDC).
- 2- Rating scale on the aspects of the physical environment, the Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford and Cryer, 1998).
- 3- The ECERS-E scale measure of the learning environment (Sylva, Siraj-Blatchford, Taggart and Colman, 1998).

Application of the NDC Scale:

Application of the NDC scale was designed to classify the pre-school according to their level of NDC application. It was rated on a 9 point scale

1= very poor application.

3= poor application.

5= good application.

7= very good application.

9= excellent.

For centres that are between any of the above categories, the intervening even number is given as a score. For example, if a centre was partly showing a good application of NDC but, in some aspects, was showing a very good application, the score would be 6.

The classification is rated on the following 9- point scale:

| | | | | | | | | |
|---------|---|------|---|------|---|---------|---|-----------|
| V. poor | | Poor | | Good | | V. good | | excellent |
| 1 | | 3 | | 5 | | 7 | | 9 |
| | 2 | | 4 | | 6 | | 8 | |

The Early Childhood Environment Rating Scale-Revised (ECERS-R)'s

background:

One of the most widely used observational measures for describing the characteristics of early childhood education and care is the Early Childhood Environment Rating Scale (ECERS, now revised; Harms, Clifford Cryer, 1998). The revised ECERS- R has 43 items which are divided into 7 sub-scales. These subscales are space and furnishing, personal care routine, language and reasoning, activities, social interaction, organisation and routine, adult working together. Each item is rated on a 7 point scale (1=inadequate, 3=minimal adequate, 5=good, 7=excellent). Completion of the ECERS usually involves

approximately a one day observation, as well as talking to staff about aspects of the routine which were not visible during the observation session.

ECERS-R is a revision of the original ECERS scale. It maintains the same conceptual framework as well as the same basic scoring approach and administration.

ECERS-Extension background:

The Effective Provision of Pre-school Education (EPPE) project is a UK longitudinal study assessing the attainment and development of children between the ages of 3 and 7 years. The EPPE team developed a second Early Childhood Environment Rating Scale based on the Desirable Learning Outcomes for 3 and 4 year olds and the associated pedagogical practices (Sylva, Sinaj-Blatchford, Taggart and Coleman, 1998). The ECERS-E was devised after wide consultation with experts and piloted extensively. The ECERS-E consists of 4 sub-scales: literacy, mathematics, science and environment and diversity. While developed in England, the ECERS-E is an interesting measure of educationally oriented pre-school provision and is likely to have wide application for all educationally oriented pre-schools.

Child assessments

Procedures for child assessments

The 230 children in the sample were assessed twice: a pre-test at the initial onset of the study and a post-test at the end of the last year in the school before they went to elementary school.

At entry children were assessed to the study using the following instruments:

- For cognitive, four sub-scales of the British Ability Scales Second Edition (BAS11) (Elliot *et al.* 1996) : Block Building, Picture Naming, Picture Similarities and Verbal Comprehension. These scales were aggregated to form a total score indicative of general cognitive attainment. The Block Building and Picture Similarities scores were aggregated to form a non—verbal sub-score. The Picture Naming and Verbal Comprehension scores were totalled to give a verbal sub-score.
- For measuring social/behavioural development the Child Social Behaviour Questionnaire (CSBQ) was used.

For post-test the following instruments were used:

- For cognitive five sub-scales of BAS were used: Picture Similarities, Verbal Comprehension, Picture Naming, Early Number Concept and Pattern Construction.
- Emergent literacy skill measures: letter recognition, initial sound recognition and rhyme recognition.
- For social/behavioural development the Child Social Behaviour Questionnaire (CSBQ).

Data was collected about child background by using a parent interview, which was administrated to provide detailed information about parent education, occupation, and family structure. In addition, details about the child's day care history and health

problems, and parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television-viewing etc) were also collected.

The British Ability Scales (BAS) background:

The BAS is organised into two batteries, one covering all the scales that are appropriate for use with pre-school children, known as the Early Years Battery, and the other covering the school years, known as the School Age Battery. The Early Years Battery is composed entirely of cognitive scales, whereas the School Age Battery comprises both cognitive and achievement scales.

In general, the Early Years Battery will be used when assessing children under 6:0 years old but it may also be used when assessing 6:0 to 7:11 year olds who for some reason are likely to have difficulty with the school age battery. Seven of the Early Years scales can be used for children aged 2:6 upwards; the remainder start at ages 3:0, 3:6 or 4:0 years. The scale at this level uses appealing artwork and manipulable objects to assess reasoning, perception and memory, together with understanding basic quantitative concept.

The cognitive scale is designed to measure clearly identifiable abilities that are significant for learning and educational performance. As each scale in the BAS is separately normed, the user can obtain and interpret profiles of cognitive strengths and weaknesses. The BAS scales are organized into those that contribute to the General Conceptual Ability score. And those that provide additional information on specific abilities.

For this study, the BAS items were translated from English to Arabic and then back translated to check for accuracy.

The BAS sub-scales do not need any changes. They were applied as they are after the researcher discussed this with professors in the field of Early Childhood Education, in King Saud University. They all agreed on the suitability of the scale.

The words in the emergent literacy skills measures were changed to Arabic and the pictures that were used were also changed to match the words. Experts in Early Childhood Education and in Arabic language checked the suitability of the words and suggested some changes until the measures were ready to use with the children.

The Child Social Behaviour Questionnaire(CSBQ) background.

The Child Social Behaviour Questionnaire (CSBQ) form consists of 45 items and all items were completed except in a small number of cases (where the teachers were unable to make the judgement).

The CSBQ form was rated by means of a five-point scale rarely or never, not often, sometimes, usually and almost always. Factor analysis was used to examine the data.

CSBQ background:

The CSBQ is developed from the Adaptive Social Behavioural Inventory (ASBI)

The ASBI was developed by Hogan *et al* (1992) as a general measure of the social and behavioural development of pre-school children. It was developed because there was not a measure available then which produced measures of social competence, prosocial and antisocial behaviours for pre-school children. Conceptually, social competence was regarded as multi-faceted. Hence, the child might have varying degrees of social skills and behaviour problems simultaneously. The original inventory contains 30 items, which were chosen to be appropriate to pre-school children.

Results

Pre-school results:

ANDC scale results:

The ANDC scale was used to classify the centres in the sample. The following table shows the sample centres according to their level of applying the NDC.

Table 1 - The sample classification according to their level of ANDC

| ANDC | v. poor | | poor | | good | | v. good | | excellent |
|-----------|------------|---|-------|---|------|-----------|---------|---------|-----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| School ID | 2 | 1 | 3 & 4 | 9 | 5 | 6 & 7 & 8 | 10 | 11 & 12 | 13 & 14 |

There were only two centres with full application of the NDC and they were in the excellent range. The rest of the centres have different levels of the application from very poor to very good.

ECERS-R and ECERS-E results:

The ECERS-R include the following sub-scales:

1. Personal care routines
2. furnishings and display for children
3. language-reasoning experiences
4. fine and gross motor activities
5. creative activities
6. social development
7. adult needs

The ECERS-E consists of 4 sub-scales:

1. literacy
2. mathematics
3. science and environment
4. diversity.

Analysis of ECERS-R and ECERS-E scores :

Descriptive statistics:

An overview of the sub-scales:

Basic characteristics of ECERS-R and ECERS-E scores are shown below.

The total ECERS-R and ECERS-E scores were distributed as shown in Figure no 1 and Figure no 2 to show the differences in the pre-schools' environment .

Figure 1 Histogram of total ECERS-R scores

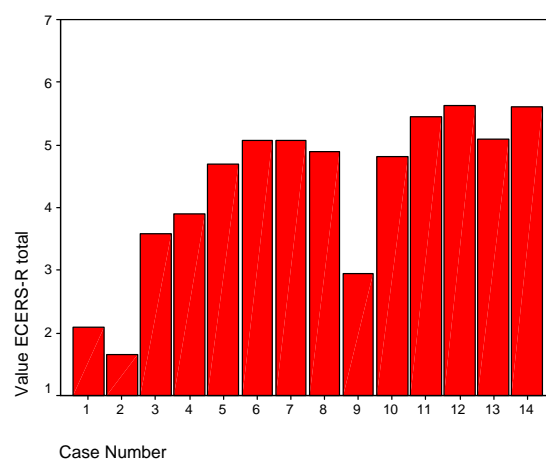
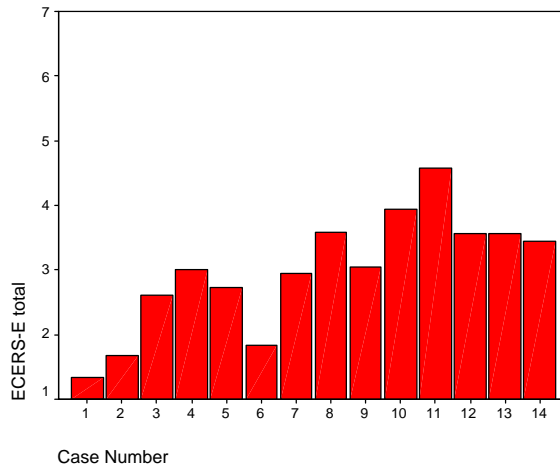


Figure 2 Histogram of total ECERS-E scores



Relationship between ECERS and ANDC:

This section will answer the following question: Is the ANDC scale related to ECERS?

The data was analysed using Pearson Product moment correlation because the main aim for this analysis is to look at the relationship of one variable to another variable where the variables were measured on a continuous scale. The question to be asked in this section is regarding the inter-relationship between specific variables measuring aspects of the centres, the observational measurements related to the centres, the ECERS scores, and whether these were related to the ANDC scale.

Analyses have indicated the existence of significant differences between pre-school centres in their quality characteristics. Quality characteristics have also been shown to vary according to the centre's degree of ANDC. Overall, centres with high application of the NDC score more highly in terms of all the ECERS observational rating of quality. The following table shows the level of ANDC and the mean for ECERS-R and ECERS-E total scores for each centre:

Table 2 ANDC level and the mean scores of ECERS-R and ECERS-E total.

| Centre ID | ANDC level | ECERS-R total | ECERS-E total |
|-----------|------------|---------------|---------------|
| 1 | 2 | 2.10 | 1.33 |
| 2 | 1 | 1.66 | 1.67 |
| 3 | 3 | 3.59 | 2.61 |
| 4 | 3 | 3.90 | 3.00 |
| 5 | 5 | 4.70 | 2.72 |
| 6 | 6 | 5.07 | 1.83 |
| 7 | 6 | 5.07 | 2.94 |
| 8 | 6 | 4.90 | 3.58 |
| 9 | 4 | 2.95 | 3.06 |
| 10 | 7 | 4.80 | 3.94 |
| 11 | 8 | 5.45 | 4.58 |
| 12 | 8 | 5.63 | 3.56 |
| 13 | 9 | 5.10 | 3.56 |
| 14 | 9 | 5.61 | 3.44 |

Tables no 3 and 4 show the relationships between the ANDC and the ECERS-R and ECERS-E scores.

Table 3 - Relationship between ECERS-R scores and ANDC

| | |
|--------------------------|-------|
| ECERS-R total | 0.90* |
| Space and furnishings | 0.83* |
| Personal care practices | 0.68* |
| Language and reasoning | 0.90* |
| Pre-school activities | 0.76* |
| Social interaction | 0.80* |
| Organisation and routine | 0.68* |
| Adults working together | 0.87* |

Table 4 -Relationship between ECERS-E scores and ANDC

| | |
|---------------|-------|
| ECERS-E total | 0.72* |
| Literacy | 0.69* |
| Mathematics | 0.29* |
| Science | 0.69* |
| diversity | 0.67* |

The ECERS-R and ECERS-E scores have a strong relationship with the ANDC scale, which means that when centres scored highly in the ECERS-R and ECERS-E they tend to have a high level in the ANDC scale. The more the centre applies the NDC the higher their ECERS-R scores.

Children's results:

Pre-test:

Once children had been recruited to the study their cognitive and social/behavioural development was assessed.

For cognitive development the four sub-scales of the British Ability Scales (BAS), translated into Arabic, were administered to the child in a one-to-one situation by the researcher and the assistant. These sub-scales were Block Building, Verbal Comprehension, Picture Similarities and Naming Vocabulary. These sub-scales were used to provide an overall BAS score as a measure of cognitive development, and verbal and non-verbal scores.

Social /behavioural development:

After the BAS sub-scales had been administered, a child's teacher who was familiar with them was asked to complete the Child Social Behavioural Questionnaire (CSBQ) an adaptation of the Adaptive Social Behavioural Inventory (ASBI) (Hogan *et al*, 1992).

Post-test:

Each child's cognitive and social development was assessed for a second time by the end of their last year in the target pre-school centres during April and May 2000. These children were given the pre-test when they were approximately 4 years old. Therefore they had had 17-18 months experience of pre-school between pre-test and post-test.

For cognitive development there were two tests, which were administered to the children in a one-to-one situation by the researcher and her assistant. These tests were:

1- five sub-scales of British Ability Scale (BAS) which were: Pattern Construction, Early Number Concept, Verbal Comprehension, Picture Similarity and Picture Naming.

2- the pre-reading tests, which were Rhyme, Letter Recognition and Initial Letters.

Social /behavioural development post-test:

For the social/behavioural development the children's teachers completed the Child Social Behavioural Questionnaire (CSBQ) during the last month of the children's last year in the pre-school.

Analysis strategy:

The regression model was used, because this statistical method allows the testing of the effects of several predictor variables simultaneously.

The regression model was developed in three stages:

First stage:

The child, family, home and childcare variables were entered using the entry procedure into the regression model. The child variables were entered first as a block and the significant variables were kept. The family variables were then entered as a block and the significant variables were kept. The home variables were then entered as a block and the significant variables were kept. Finally the childcare variables were entered and the significant variables were kept. The variables that had statistically significant effects were retained in the model to produce the final model for the first stage. Thus at the end of the first stage of analysis the variables other than the pre-school variables which had had a significant effect had been identified.

Second stage:

The significant variables from the first stage were entered as a block to the model and then the ECERS variables were entered individually. This approach ensured that all other significant effects had been taken into account before testing for ECERS effects. All the

ECERS-R and ECERS-E variables were analysed separately. Firstly the ECERS-R total score was entered. Then the ECERS-R sub-scales scores were entered. Then this was repeated separately for ECERS-E scores. This separation of analysis for the sub-scales of ECERS-R and ECERS-E is to avoid problems caused by the collinearity (association) of ECERS-R and ECERS-E scales. The final models shown only include these variables which showed a significant effect.

Initially, all ECERS-R or ECERS-E scores were entered as a block. However, this created problems related to collinearity. The associations between subscales meant that they usually interfered with each other and produced no overall significant effects. However, individually, subscales often did produce significant effects. Hence it was decided to proceed with the analysis entering ECERS-R and ECERS-E scores individually.

third stage:

The significant variables from the first stage were entered as a block to the model and then the ANDC scale variable was added. This approach ensured that all significant non pre-school effects had been taken into account before testing for the ANDC scale effects.

Cognitive results at post-test:

The effects of pre-school experience on children cognitive development are summarised here:

The effects of ECERS-R :

The effects of ECERS-R on BAS total:

When the ECERS-R total (sum of ECERS-R items) variable was entered, it was nearly significant, and when the sub-scale items were entered, ECERS- R 5 (social interaction) had a positive significant effect. The following table show the effect of ECERS- R 5 (social interaction) on BAS total scores:

Table 5 The relationship between BAS total scores and the ECERS-R sub-scales scores.

R = .64
 $R^2 = .40$
Adjusted $R^2 = .38$
 $F(9,204) = 14.66$
Sig $p < 0.0001$

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
|--------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| Child | | | | | |
| Cognitive pre-test | .75 | .08 | .52 | 9.20 | .000 |
| Age | 1.33 | .32 | .23 | 4.10 | .000 |
| Health Problems compared to none | -6.75 | 2.53 | -.15 | -2.60 | .010 |
| Devel Problems compared to none | -14.80 | 6.15 | -.14 | -2.41 | .017 |
| Family | | | | | |
| Father's education compared to none: | | | | | |
| High school | 5.59 | 4.60 | .11 | 1.22 | .226 |
| Diploma | 9.51 | 5.86 | .12 | 1.62 | .106 |
| Degree | 8.44 | 3.92 | .25 | 2.16 | .032 |
| Post-graduate | 10.17 | 4.36 | .22 | 2.33 | .021 |
| ECERS-R | | | | | |
| ECERS -R 5 social interaction | 1.00 | .50 | .11 | 1.99 | .048 |

Dependent Variable: BAS Total

Children attending those centres with higher scores in ECERS-R 5 social interaction showed more progress in BAS Total .

The effects of ECERS-R on verbal sum total (sum of Verbal comprehension and Picture Naming scores):

The following table show the effects of ECERS-R total on verbal sum total (sum of Verbal comprehension and Picture Naming scores):

Table 6The relationship between the Verbal sum scores and ECERS-R total.

R = .52

R² = .27

Adjusted R² = .25

F (5,205) =14.59

Sig p<0.0001

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
|---------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| Child | | | | | |
| Cognitive pre-test | .26 | .04 | .38 | 6.16 | .000 |
| Age | .47 | .17 | .17 | 2.87 | .005 |
| Health Problems compared to none | -4.15 | 1.29 | -.20 | -3.22 | .001 |
| Development problems compared to none | -6.64 | 3.13 | -.13 | -2.12 | .035 |
| ECERS-R | | | | | |
| ECERS-R total | 1.30 | .42 | .19 | 3.09 | .002 |

Dependent Variable: Verbal sum

ECERS-R total (sum of ECERS-R items scores) had effects on this measure: Verbal sum total.(sum of Verbal comprehension and Picture Naming scores). Children attending those centres with higher scores in ECERS-R items showed more progress in these tests.

The effects of ECERS-E :

When the ECERS-E total variable was entered it had an almost significant positive effect, and when the ECERS-E sub-scales were entered ECERS-E 4 diversity showed a positive significant effect.

Table 7 The relationship between BAS scores and the ECERS-E sub-scales.

R = .65
 $R^2 = .42$
Adjusted $R^2 = .40$
 $F(9,204) = 15.61$
Sig $p < 0.0001$

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
|---|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| Child | | | | | |
| Cognitive pre-test | .77 | .08 | .53 | 9.52 | .000 |
| Age | 1.24 | .32 | .22 | 3.88 | .000 |
| Health Problems compared to none | -6.83 | 2.49 | -.15 | -2.74 | .007 |
| Develop Problems compared to none | -15.97 | 6.07 | -.15 | -2.63 | .009 |
| Family | | | | | |
| Father's qualification compared to none | | | | | |
| High school | 5.70 | 4.54 | .11 | 1.26 | .210 |
| Diploma | 10.00 | 5.79 | .12 | 1.73 | .086 |
| Graduate | 8.26 | 3.87 | .24 | 2.14 | .034 |
| Post-graduate | 9.67 | 4.31 | .21 | 2.25 | .026 |
| ECERS | | | | | |
| ECERS-E 4 Diversity | 2.85 | .95 | .17 | 3.02 | .003 |

Dependent Variable: BAS 2 Total

Children attending those centres with higher scores in ECERS-E 4 Diversity showed more progress in BAS 2 Total scores.

The effects of ECERS-E total (sum of ECERS E items) on Verbal sum scores :

The following tables show that this variable had positive effects on children's results in the Verbal sum total (sum of Verbal Comprehension and Picture Naming scores).

Table 8 The relationship between the Verbal sum scores and ECERS-E total.

R = .53

R² = .28Adjusted R² = .26

F (5,205)=15.66

Sig p<0.0001

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
|---------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| Child | | | | | |
| Cognitive pre-test | .27 | .04 | .39 | 6.47 | .000 |
| Age | .43 | .16 | .16 | 2.64 | .009 |
| Health Problems compared to none | -4.35 | 1.27 | -.21 | -3.42 | .001 |
| Development Problems compared to none | -7.24 | 3.10 | -.14 | -2.33 | .021 |
| ECERS-E | | | | | |
| ECERS-E total | 2.27 | .61 | .22 | 3.69 | .000 |

Dependent Variable: Verbal sum

The effects of ANDC scale:**Table - 9 The relationship between the Verbal sum scores and ANDC.**

R = .50

R² = .25Adjusted R² = .23

F (5,205)=13.22

Sig p<0.0001

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
|---------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| Child | | | | | |
| Cognitive pre-test | .26 | .04 | .38 | 6.23 | .000 |
| Age | .51 | .17 | .19 | 3.03 | .003 |
| Health Problems compared to none | -4.33 | 1.30 | -.21 | -3.33 | .001 |
| Development Problems compared to none | -6.54 | 3.17 | -.13 | -2.06 | .040 |
| Pre-school level | | | | | |
| ANDC | .42 | .20 | .13 | 2.07 | .040 |

Dependent Variable: Verbal Sum

The ANDC scale had a positive significant effect when it was entered by itself. When it was entered with the other significant variables from the second stage it had no effect because they intercorrelated and they interfered with each other.

The ANDC scale had a positive effect on children' scores on Verbal-Sum and Verbal Comprehension. Where centres had a high level on this sub-scale, children showed more progress in these tests.

Social/behavioural results at post-test:

The effects of pre-school independent variables ECERS-R and ECERS-E on children's Social/behavioural scores are summarised here:

The effects of ECERS-R total (sum of ECERS-R items scores):

The following table show the effects of ECERS-R total (sum of ECERS-R items scores) on Social/behavioural scores:

Table 10 The relationship between the confidence/independence scores and the ECERS-R total scores.

R = 0.42

R² = 0.17

Adjusted R² = 0.16

F (4,200) = 10.17 Sig p< 0.0001

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------------------|-----------------------------|---------|---------------------------|-------|------|
| | B | Std.Err | Beta | | |
| Child | | | | | |
| Confidence/independence pre-test | .30 | .07 | .29 | 4.33 | .000 |
| Gender | .28 | .10 | .20 | 2.99 | .003 |
| Home | | | | | |
| Home learning environment | -2.03E-02 | .08 | -.17 | -2.48 | .014 |
| ECERS | | | | | |
| ECERS-R total | 8.27E-02 | .04 | .13 | 2.02 | .045 |

Dependent Variable: confidence and independence

centres which scored higher in this variable the children increased in confidence more than the children at centres which scored lower in these variables.

The effects of ECERS-E total (sum of ECERS-E items scores):

The following tables show the effects of ECERS-E total (sum of ECERS-E items scores) on children's Social/behavioural scores:

Table 11 The relationship between the co-operation scores and the ECERS scores.

R = 0.41

 $R^2 = 0.17$ Adjusted $R^2 = 0.15$

F (4,200) = 9.72 Sig p< 0.0001

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|--------------------------|-----------------------------|---------|---------------------------|-------|------|
| | B | Std.Err | Beta | | |
| Child | | | | | |
| Co-operation pre-test | .24 | .06 | .29 | 4.30 | .000 |
| Gender | .26 | .12 | .15 | 2.27 | .024 |
| Home | | | | | |
| Play with friend at home | -7.54E-02 | .03 | -.16 | -2.47 | .014 |
| ECERS-E | | | | | |
| science | .13 | .06 | .15 | 2.29 | .024 |

Dependent Variable: co-operation

Table 12 The relationship between the sociability scores and the ECERS scores.

R = 0.34

 $R^2 = 0.12$ Adjusted $R^2 = 0.10$

F (3,200) = 8.60

Significance p< 0.0001

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|---------------------------|-----------------------------|---------|---------------------------|-------|------|
| | B | Std.Err | Beta | | |
| Child | | | | | |
| Sociability pre-test | .27 | .06 | .30 | 4.41 | .000 |
| Home | | | | | |
| Home learning environment | -1.53E-03 | .01 | -.14 | -2.00 | .046 |
| ECERS-E | | | | | |
| Science | 8.78E-02 | .05 | .13 | 1.94 | .050 |

Dependent Variable: sociability Post-Test

Table 13 The relationship between the confidence/independence scores and the science

R = 0.42

 $R^2 = 0.18$ Adjusted $R^2 = 0.16$

F (4,200) = 10.44 Sig p< 0.0001

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------------------------|-----------------------------|---------|---------------------------|-------|------|
| | B | Std.Err | Beta | | |
| Child | | | | | |
| Confidence/independence pre-test | .32 | .07 | .31 | 4.70 | .000 |
| Gender | .27 | .10 | .19 | 2.80 | .006 |
| Home | | | | | |
| Home learning environment | -2.05E-02 | .01 | -.17 | -2.52 | .013 |
| ECERS-E | | | | | |
| Science | .10 | .05 | .15 | 2.23 | .027 |

Dependent Variable: confidence/ independence

Table 14 The relationship between the Attention problem scores and science sub-scale.

R = 0.51

R² = 0.26

Adjusted R² = 0.22

F (9,200) = 7.40 Sig p< 0.0001

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|--|-----------------------------|---------|---------------------------|-------|------|
| | B | Std.Err | Beta | | |
| Child | | | | | |
| Attention problem pre-test | .26 | .06 | .28 | 4.35 | .000 |
| Age | 4.65E-02 | .02 | .15 | 2.38 | .018 |
| Family | | | | | |
| Father's education compared with none | | | | | |
| High school | -.62 | .27 | -.23 | -2.31 | .022 |
| Diploma | -1.12 | .37 | -.23 | -2.99 | .003 |
| Graduate | -.98 | .23 | -.54 | -4.18 | .000 |
| Post graduate | -1.02 | .26 | -.43 | -3.94 | .000 |
| Mother's age compared with mother's age group under 26 | | | | | |
| Mother's age 26-35 | -.43 | .22 | -.23 | -1.94 | .054 |
| Mother's age 36-55 | -.55 | .23 | -.28 | -2.34 | .020 |
| ECERS-E | | | | | |
| Science | -.18 | .06 | -.18 | -2.76 | .006 |

Dependent Variable: attention problems

For ECERS-E there was an effect for science only. This variable has a strong effect.

Children in centres which scored highly in this variable increased more in social competence, confidence and co-operation, and decreased in attention problems.

Discussion

Discussion of centres' results:

A central part of this paper concerns the research question. Is variation in application of the NDC associated with variation in how favourable the environment is for children? This study was concerned with the characteristics of pre-school centres that vary in their application of the NDC. This was measured by Application of the Newly Developed Curriculum scale (ANDC) constructed for this study. Centres applying the NDC score highly and the more traditional centres with low or poor application of the NDC score low in this scale.

There were three instruments that were used to assess pre-school settings: the ANDC scale, ECERS-R and ECERS-E. There were distinct differences between the centres with a high level of application of the NDC and the most traditional centres with a low or poor level of application of the NDC. For the centres with some application of the NDC the results varied between measures. The centres with a high application of the NDC were more favourable in providing facilities and better interaction with children.

The ANDC scale classifies the centres in the sample according to their level of application of the NDC. ECERS-R provides a profile for each centre and ECERS-E describes the curriculum within each center. The ECERS-R and ECERS-E consist of sub-scales, each of which is comprised of a range of items describing aspects of quality. The results from a combination of these instruments show that centres, which have a high level of ANDC, offer a good environment for adults and children. More traditional centres did appear to have more academic activities.

Discussion of ECERS-R results:

When the ECERS-R was applied to the fourteen pre-schools there was a strong association between the ECERS-R sub-scales. Most centres achieved an adequate score on ECERS-R sub-scales. The centres (centre nos. 13, 14) with a high level of NDC application usually had the highest scores, followed by centres that combined the NDC with extra appropriate educational activities (centre nos. 11, 12, 10). The lowest scores were usually found in the most traditional centres where there was a low application of the NDC (centre nos. 1, 2 and 9).

Most centres had high scores in ECERS-R 1 space and furnishing followed by ECERS-R 7 adults working together. Because the contents of these two sub-scales were easy to apply and all centres in the sample were private, their budget allowed them to equip the pre-schools well. The aspects of ECERS-R dealing with the physical environment and routine childcare were easy to satisfy for these pre-schools because they had good resources. Most centres in the sample were arranged and equipped well so most of them had high scores in most ECERS-R sub-scales. The scales space and furnishing and adults working together had the highest subscale scores. These subscales are the easiest to get high scores in if the pre-schools have good resources. However, they do not mean that interaction with the children is good.

Most centres, which were not applying the NDC extensively, had lower scores in ECERS-R 3 language and reasoning.

For ECERS-R 4 pre-school activities, all centres except two had less than good scores. Most teachers are not well trained in pre-school learning even if they have a degree in ECE because even the degrees in ECE in Saudi Arabia do not cover this topic well. They

did not interact with children during their play and work and could not provide the children with appropriate activities as defined by the ECERS-R 4 activities sub-scale.

The ECERS-R's findings demonstrated that the centres with greater application of the NDC (e.g. centre nos. 13 and 14) always had high scores in all sub-scales as compared with the centres with the lowest application of the NDC (e.g. centre nos. 1 and 2). Other centres, which were varied in their application of the NDC, showed more variation in their scores: whereas some of them achieved good quality others were in the adequate range. The centres with a high application of the NDC (centre nos. 13 and 14) are in-service training centres for all government pre-school teachers so the staff in these two centres are all trained. This is another reason for their high scores on ECERS.

Discussion of ECERS-E results:

ECERS-E was produced by Sylva *et al.* (1998), with subscales for literacy, mathematics, science and diversity. The structure of ECERS-E was made equivalent to the structure of ECERS-R and was intended to be complementary to ECERS-R. This extension to ECERS-R is particularly applicable to settings for 3-6 year old children, which have an educational purpose (Melhuish, 2001). Because ECERS-E is new and was originally designed for the English curriculum, it needs to be interpreted carefully. This study used the ECERS-E to explore its applicability to KSA, rather than regarding it as automatically appropriate as a measure of quality in KSA.

While the ECERS-R results showed a good level for most centres, ECERS-E results were more disappointing. Most centres were around the 'minimal' rating. For most centres the highest scores were for maths. and the lowest scores were for diversity. For ECERS-E there was less correlation between sub-scales, indicating that the sub-scales were more

differentiated from each other. While the highest scores in ECERS-R were always for the most modern centres (centre nos. 13 and no 14), the highest scores in ECERS-E were for centres that combined the NDC with extra educational activities e.g. centre no. 11. This is because the main problem in the NDC is the lack of educational activities.

ECERS-E is a new curriculum sub-scale, which was designed to measure educational provision based on the UK desirable learning outcomes. It was used for the first time in the EPPE study. For this research in KSA, it was used it as an exploratory study, which confirmed that it can be applied for measuring aspects of educational activities in pre-schools in Saudi Arabia.

Compared with the EPPE study, the present study found some similarities in terms of ECERS-E overall results in England. The EPPE study found that ECERS-R scores tend towards the top of the 'adequate' range and sometimes approach 'good'. The ECERS-E scores in pre-schools in England were more disappointing with provision for mathematics, science and diversity hovering around 'minimal' rating (Sylva *et al*, 1999).

Why is ANDC related to ECERS-R, ECERS-E ?

The ANDC scale measures the level of application of the NDC. Because the NDC shares much the same values that underly ECERS-R and ECERS-E, so centres that have a high level of ANDC also have high scores in ECERS-R and ECERS-E. Taking the associations between these separate aspects of pre-school environments explains the high correlation between ANDC and ECERS-R and ECERS-E.

The impact of pre-school experience on children's cognitive development:

It was hypothesised that children attending pre-schools with greater application of the NDC would have greater improvement on the measured aspects of child development than those children attending pre-schools using lower or poor application of the NDC.

Different measures were used to assess pre-schools' environments: ANDC scale, ECERS-R, ECERS-E.

Interpreting the impact of ECERS-R and ECERS-E on children's cognitive scores:

The ANDC, ECERS-R, and ECERS-E scales were highly correlated. Centres with a high application of the NDC had a high level in the ANDC scale and had higher scores in ECERS-R and ECERS-E. This section will discuss the impact of these results on children's cognitive development.

ECERS-R total (the sum of ECERS-R items) showed a significant positive relationship with children's progress in overall cognitive development (BAS total). When the ECERS-R sub-scales were tested separately, the social interaction sub-scale of this measure also showed a significant positive impact on overall cognitive development, verbal ability and pattern construction. Moreover, the ECERS-R 'space and furnishing', 'activities' and 'programme structure' sub-scales all showed a positive relationship with progress in verbal ability, verbal comprehension and picture naming. The sub-scales 'language and reasoning' and 'adults working together' also showed a significant positive relationship with the progress in verbal ability and verbal comprehension. It is obvious that ECERS-R mostly affects the verbal sub-scales more than the non-verbal sub-scales.

The ECERS-E total score, which is the more curriculum-based instrument, had a positive effect on children's overall cognitive progress, progress in verbal ability, verbal

comprehension and picture naming. When tested separately, the literacy sub-scale of this measure also showed a significant positive effect on verbal comprehension and picture naming. The sub-scale science showed a positive relationship with children's progress in verbal comprehension and picture naming. The diversity sub-scale also showed a significant positive impact on overall cognitive development, verbal ability and verbal comprehension.

In general ECERS in this study associated positively with BAS results. It contributed more strongly to verbal skills.

Interpreting the impact of ANDC on children's cognitive development:

The analysis of the ANDC measure also indicates a link between children's cognitive progress and quality. It is important to mention that there was a significant association between centres' ratings in terms of the ECER-R, ECERS-E and ANDC.

The ANDC scale was significantly positively associated with centre effects on verbal-sum and verbal comprehension. Also it was positively associated (almost significant) with overall cognitive development and picture similarities. Hence the positive effects associated with ANDC probably affect aspects of higher quality as measured by ECERS-R and ECERS-E.

Interpreting the social/behavioural development post-test results:

For social/behavioural development the children's teachers completed the Child Social Behavioural Questionnaire (CSBQ) during the last month of the children's last year in the pre-school. In this analysis, progress from pre-test to post-test is measured. Effect for some background variables will be absorbed in the pre-test scores.

Interpreting results of the impact of the pre-school environment on children's

social/behavioural development:

Interpreting ECERS-R results:

Overall the ECERS-R scale shows a significant association with 'confidence'. The sub-scales space and furnishing, activities, social interaction and programme structure all showed a significant positive association with confidence.

The ECERS-E overall measure had no effect on children's social/behavioural development. But when the sub-scales were tested separately science had a significant positive impact on most of the measures. At centres which scored highly in the science sub-scale children showed more progress in social competence, confidence, co-operation and a decrease in attention problem measure.

Recommendations:

One of the main findings in this study is that different applications of the NDC lead to different outcomes. Centres with a high level of application of the NDC scored highly in ECERS-R. The NDC is the official curriculum in Saudi Arabia for all pre-schools but most pre-schools do not apply it appropriately. There are insufficient numbers of trained qualified teachers to make the application of the NDC possible throughout the pre-schools in Saudi Arabia. Also there is no policy controlling the licence for teaching young children. Any one can work as a pre-school teacher in Saudi Arabia. Teachers are really confused and they do not understand the principles and the values underlying the NDC. The NDC guidebook is not adequate to prepare the teachers for applying the NDC. Teachers need resources and training programmes for the NDC and on working with

young children in general. Also pre-schools need a sufficient budget to allow them to apply the NDC.

The results from the ECERS-E confirm that centres with a good application of the NDC have a lack of educational activities such as mathematics, language and science. These activities need trained teachers as well as good resources and materials. Mathematics was the major weak area in the centres applying the NDC. Centres that apply the NDC only have lowest scores in this area.

There is lack of an assessment strategy. Most pre-schools reported that they do not have any assessment strategy that is based on the observation of children's work and when they have any kind of assessments they do not use it in planning. Most of them have routine assessments to show to the parents the progress the child makes in areas like letters and numbers.

The NDC is not understood by parents and there is no strategy to educate parents and prepare them for this big change in their attitude. They are isolated from what happens in the pre-school. All pre-schools reported that they do not allow parents to participate in policy making.

So to improve the early childhood education in the country policy makers have to take this matter seriously. The early childhood programmes for training pre-school teachers in colleges and universities need further improvement. The most critical component in quality child care is in the interaction between the child and the care provider. Research confirms the direct links between the training of child care providers, the quality of child care and the positive outcomes of child development.

There are insufficient good training resources. This will require providing sufficient funds for pre-schools to employ qualified trained staff and this applies especially to the government pre-schools. The private pre-schools will need to be regulated if they are to improve in a manner that leads to better pre-school education.

This research indicates the need for further research. The weak points in the early childhood education system in KSA have become more clear and there is a need for serious improvement. The following are some suggestions for improvement and future research:

- A follow up research for the children in the sample through their primary years.
- The importance of pre-school teachers' training and qualifications including the role of in-service programmes needs further study.
- The role of parental involvement and participation in pre-school provision, both from the perspective of practice and policy, needs further development and research in Saudi Arabia.
- The importance of the ongoing evaluation of the Early Childhood curricula.

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