Encouraging Quality in Early Childhood Education and Care (ECEC)

RESEARCH BRIEF: CURRICULUM MATTERS

What is curriculum?

Curriculum refers to the contents and methods that substantiate children's learning and development. It answers the questions "what to teach?" and "how to teach it?" (NIEER, 2007). It is a complex concept especially in ECEC, containing multiple components, such as ECEC goals, content and pedagogical practices (Litjens and Taguma, 2010).

What is at stake?

There is growing consensus on the importance of an explicit curriculum with clear purpose, goals and approaches for zero-to-school-age children (Bertrand, 2007). Most OECD countries now use a curriculum in early childhood services, especially as children grow older, that is to say, that some structuring and orientation of children's experience towards educational aims is generally accepted. Currently, there is little pedagogical direction for younger children, although many neurological developments take place prior to age of three or four (OECD, 2006). Curricula are influenced by many factors, including society's values, content standards, research findings, community expectations, culture and language. Although these factors differ per country, state, region and even programme, high-quality, well-implemented ECEC curricula provide developmentally appropriate support and cognitive challenges that can lead to positive child outcomes (Frede, 1998).

With trends toward decentralisation and diversification of policy and provision, there is more variation in programming and quality at the local level. A common framework can help ensure an even level of quality across different forms of provision and for different groups of children, while allowing for adaptation to local needs and circumstances. A clear view and articulation of goals, whether in the health, nutrition or education field, can help foster programmes that will promote the well-being of young children and respond adequately to children's needs (OECD, 2006).

Well-defined educational projects also serve the interests of young children. In infant-toddler settings with a weak pedagogical framework, young children may miss out on stimulating environments that are of high importance in the early years. At the programme level, guidelines for practice in the form of a pedagogical or curriculum framework help staff to clarify their pedagogical aims, keep progression in mind, provide a structure for the child's day, and focus observation on the most important aspects of child development (Siraj-Blatchford, 2004).

Debate remains widespread over the "correct curriculum approach" for the youngest and older children in ECEC. This raises important questions about aspects, such as the scope, relevance, focus and age-appropriateness of content; depth and length of descriptions; and input- or outcome-based descriptions. The learning areas that receive most focus in official curricula – particularly in countries where child assessments are used shortly after entry into primary school – are literacy and numeracy. Countries in the social pedagogy tradition do not exclude emergent literacy and numeracy but seek to maintain an open and holistic curriculum until children enter school and, sometimes, well into the early classes of primary school. On the other hand, countries in which early education has been part of, or closely associated with, primary school tend to privilege readiness for school and a more academic approach to curriculum and methodology.

Why does it matter?

Consistency and adaptation to local needs

A common ECEC curriculum can have multiple benefits. It can ensure more even quality levels across provisions and age groups, contributing to a more equitable system. It can also guide and support staff; facilitate communication between teachers and parents; and ensure continuity between pre-primary and primary school levels. However, a curriculum can remain unchanged for years and lack the necessary innovation to adapt to ever-changing "knowledge" societies. It can equally limit the freedom and creativity of ECEC staff (OECD, 2006).

Because ECEC centres are becoming more culturally diverse with children from different backgrounds and home environments, acknowledging that these children might have different needs is important for the effectiveness of a programme. Settings and activities that are designed to accommodate young children's different approaches to learning have been found to reduce disruptive and inattentive behaviour, like fighting with peers and unwillingness to respond to questions or co-operate in class (Philips *et al.*, 2000). The wide range of cultures, communities and settings in which young children grow up makes it essential to engage different stakeholders in developing and refining curricula and to adapt curricula, when needed, to local or cultural circumstances. This is to ensure that curricula actually meet children's needs and truly focus on the child and their development (NAEYC, 2002).

Balancing diverse expectations

It is important that all stakeholders agree on the contents of the pre-primary curriculum. Governments and parents may share common objectives such as preparing children for school; but they may also disagree on the appropriateness of specific pre-primary subjects for children, such as the integration of ICT in the classroom. In multicultural societies, governments may want to create a skilled and knowledgeable workforce and prioritise shared values for building a sense of community. Meanwhile, minority group families may be more concerned with transmitting native languages and customs to children while respecting specific beliefs on child rearing. Curricula can contribute to balancing different expectations of early childhood development in the curriculum and ensure that expectations and needs of different stakeholders are met (Bennett, 2011; Siraj-Blatchford and Woodhead, 2009; Vandenbroeck, 2011).

Provides guidance, purpose and continuity

Curriculum can provide clear guidance and purpose through explicit pedagogical guidelines. A focused curriculum with clear goals helps ensure that ECEC staff cover critical learning or development areas. It can therefore equip children with the knowledge and skills needed for primary school and further learning and facilitate smooth transitions between education levels (UNESCO, 2004).

Improves quality and reinforces impact

Curriculum can establish higher and more consistent quality across varied ECEC provisions; and having a steering curriculum is found to contribute to decreased class repetition, reduced referral to special education and better transitions to primary school (Eurydice, 2009). At the same time, a high-quality curriculum can reduce the fade-out effect of knowledge gained in preschool (Pianta *et al.*, 2009).

Facilitates the involvement of parents

Curriculum can inform parents about what their children are learning in an education or care setting. It can act as a bridge between ECEC staff and parents for information sharing and needs-based interventions. Parental knowledge of the curriculum can be particularly important for children with special needs or learning difficulties to provide added support at home. One of the most effective approaches to increasing

children's later achievement and adjustment is to support parents in actively engaging with children's learning activities at home (Desforges and Abouchaar, 2003; Harris and Goodall 2006). Activities that can be beneficially promoted include reading to children, singing songs and nursery rhymes, going to the library and playing with numbers.

What aspect matters most?

Thinking beyond curriculum dichotomies

Traditionally, ECEC curricula have been categorised into academic and more comprehensive models. An academic approach makes use of a staff-initiated curriculum with cognitive aims for school preparation. A comprehensive approach centres on the child and seeks to broaden the scope for holistic development and well-being (Bertrand, 2007; OECD, 2006). An academic approach can prescribe teaching in critical subject areas but can also limit a child-centred environment characterised by self-initiated activity, creativity and self-determination (Eurydice, 2009; Prentice, 2000). With more flexible aims, a comprehensive approach can better integrate social and emotional well-being, general knowledge and communication skills but risks losing focus of important education goals, as can be seen in Table 1 (Pianta, 2010; Bertrand, 2007; UNESCO, 2004).

It is argued that high-quality ECEC settings are related to curriculum practice in which cognitive *and* social development are viewed as complementary and of equal importance. Such integrated curriculum is believed to contribute to high-quality ECEC and improved social behaviour (Table 2) (Bennett, 2004; Siraj-Blatchford, 2010). As an example, Sweden is considered to have high-quality ECEC in part because its curriculum contents place the same value on social and cognitive learning (Sheridan *et al.*, 2009, Pramling and Pramling Samuelsson, 2011).

It should be noted that "mixed models" that combine different curriculum approaches are not always successfully integrated in practice. In some countries, the implementation of a mixed model curriculum has been found to be less effective than pure "academic" or "comprehensive" approaches. Nevertheless, a clear dichotomy between the "academic" and "comprehensive" approaches is not necessarily warranted. Instead of focussing on "type" of curriculum it may be beneficial to highlight a curriculum's 1) critical learning areas and 2) implementation (Eurydice, 2009).

Table 1. Effects of academic and comprehensive curriculum models

Which "model" is most likely to improve a child's...	Academic	Comprehensive
IQ scores	X	
Motivation to Learn		X
Literacy and Numeracy	X	
Creativity		X
Independence		X
Specific Knowledge	X	
Self-confidence		X
General Knowledge		X
Initiative		X
Short-term outcomes	X	
Long-term outcomes	X	X

Source: Pianta *et al.*, 2010; Eurydice, 2009; Laevers, 2011; Schweinhart and Weikart, 1997.

Table 2. Different curriculum models' effect on school behaviours

	Direct Instruction	Child Centred (constructivist)	Child Centred (social)
Misconduct at age 15	14.9	5.9	8.0
Ever been expelled from High School	16.0%	5.9%	8.0%
Total number of classes failed	9.6	5.0	4.9

Note 1: For "Misconduct at age 15", the sum is out of 18 possible criteria of misconduct. For "Ever been expelled from High School", this is the percentage of sample group members that had been expelled from High School. For "Total number of classes failed", this is the number of classes failed by per member of sample group (asked at age 23).

Note 2: Results are from a study of different curriculum models impact on disadvantaged children in New Jersey. The sample groups are randomly selected and have comparable socio-economic backgrounds and other background characteristics.

Note 3: "Child Centred (constructivist)" is a High/Scope curriculum model, "Child Centred (social)" is a Nursery School programme with a focus on social skills. Both curriculum models place stronger weight on child-initiated activities.

Source: Schweinhart and Weikart, 1997.

Critical learning areas

Literacy

The importance of literacy is well-documented as the means through which all other subject areas are acquired (NIEER, 2006). Researchers continually point to the benefits of literacy for language development and reading outcomes (UNESCO, 2007). Literacy has also been consistently linked to improved school performance and achievement as well as higher productivity later in life. Evidence suggests literacy should focus on improving vocabulary and listening skills; building knowledge of the alphabetic code; and introduce printing (NIEER, 2006). The OECD has shown that children whose parents often read to them show markedly higher scores in PISA 2009 than students whose parents read with them infrequently or not at all (OECD, 2011). Research also shows that children quickly establish a stable approach to learning literacy. In order to do so, it is essential that they are exposed to texts, pictures, books, etc., in different communicative contexts. For example, structured play that is integrated into children's everyday interests can more easily introduce the fundamentals of written language (Mellgren and Gustafsson, 2011).

Numeracy

There is a general consensus that early mathematics should be implemented on a wide scale, especially for disadvantaged children. Even the youngest children use abstract and numerical ideas (amounts, shapes, sizes) in everyday "play" (Björklund, 2008); and staff can use children's existing knowledge and curiosity to develop mathematical concepts, methods and language (Amit and Ginsburg, 2008). In everyday activities, numeracy should focus on "big ideas" to support mathematical competence, namely numbers and operations; shapes and space; measurement and patterns (Amit and Ginsburg, 2008; NIEER, 2009).

Developing early mathematical skills means that the child discerns relations in space, time and quantities and acquires an ability to use his or her understanding in communication with others when solving problems, in logical reasoning and in representation (Björklund, 2008 and 2010). Longitudinal studies on early numeracy show that a child's understanding of numbers and numeric relationships can predict later acquisition of arithmetical skills and mathematical competence (Aunio and Niemivirta, 2010; Aunola *et al.*, 2004).

ICT

Computer-facilitated activities can have positive impacts on play and learning. They can tap into a child's creativity and motivate curiosity, exploration, sharing and problem solving (UNESCO, 2010). ICT can even eliminate boundaries between oral and written language and allow the visualisation of mathematical concepts and relationships (UNESCO, 2010). But while computer use is positively associated with achievement in math, it can be negatively correlated with reading. Some studies demonstrate that more frequent use of computers among low-achieving readers can hinder literacy progress since computers tend to replace face-to-face instruction, which is critical in literacy development (Judge *et al.*, 2006).

Science

When a child experiences science-related courses early in life, he or she is found to be encouraged to ask questions, think more critically, experiment, develop his/her reasoning skills, read and write. Studies suggest that children become better problem solvers and even experience a raise in their IQ when they are taught principles of logic, hypothesis testing and other methods of reasoning. These dimensions are all tackled in science practices (Bybee and Kennedy, 2005).

Art and music

Arts can boost children's attention, improve cognition and help children learn to envision, *i.e.*, how to think about what they cannot see. The ability to envision can help a child generate a hypothesis in science later in life or imagine past events in history class. Intensive music training can help train children for geometry tasks and map reading. However, there is little attention in research to children's use of art and music practices and its effect on developmental outcomes (Litjens and Taguma, 2010).

Physical and health development

Motor skills, such as crawling, walking, gym classes or play time, are related to children's development of social skills and an understanding of social rules. Health education and hygiene practices are found to have positive effects for children and their parents. Children participating in ECEC programmes with specific hygiene and health guidelines have improved hygiene habits, which often result in healthy weight and height in comparison to children who do not benefit from such practices (Litjens and Taguma, 2010).

Play

It is important to integrate exploration, play and peer interaction into the curriculum. Evidence suggests that "social pretend play" and "child-initiated play" lead to better co-operation, self-regulation and interpersonal skills (Bodrova and Leong, 2010; Nicolopoulou, 2010). Child-initiated play has been specifically linked to symbolic representation (Bodrova and Leong, 2010). Researchers point out that the combination of indoor and outdoor play – involving the use of media, role play, drawing and puppets – provides numerous high-quality development opportunities for children to create and negotiate (Aasen *et al.*, 2009).

Choice, self-determination and children's agency

Research shows that children are more competent and creative across a range of cognitive areas when they are given the *choice* to engage in different well-organised and age-appropriate activities (CCL, 2006). A curriculum can stimulate this behaviour through including cross-disciplinary learning activities that trigger children's curiosity. Fun and interesting themes, such as "Alive!" (the study of living vs. non-living things), can make learning more personal and relevant for young learners (NIEER, 2007). Implementing such activities in small groups can encourage greater autonomy (Eurydice, 2009; Laevers, 2011) and provides more space for spontaneous or emergent learning (NIEER, 2007). Children's participation is not

only important in order to facilitate effective learning of different curriculum elements but can be important in its own right and foster democratic values. When placing value on children's agency, it is considered important that children are allowed freedom of expression and that their modes of communication are recognised in everyday interactions (Bae, 2009).

Children's perspectives

Research on ECEC curriculum confirms the importance of children's perspectives not only through their participation in activities – but through their active input in decision making (Broström, 2010; Clark *et al.*, 2003; Sommer *et al.,* 2010). Evidence suggests that consultation with children (only when age-appropriate and possible) can increase their self-esteem and foster social competence (Clark *et al.,* 2003). It can also help ECEC staff and management reflect on their own practice and aspects such as the design of indoor and outdoor spaces (Pramling Samuelsson and Asplund Carlsson, 2008).

Child-initiated learning

Children learn best when they are active and engaged; when interactions are frequent and meaningful; and when curriculum builds on prior learning (Kagan and Kauerz, 2006; NIEER, 2007). The ability of staff to create a chain of learning events over time with clear direction and concrete activities is also important for consistent development, especially in academic topics (Doverborg and Pramling Samuelsson, 2011).

Evidence suggests that a curriculum with a high level of child-initiated activities can have long-term benefits, including an increased level of community service and motivation to pursue higher education (Figure 1).

Figure 1. Impact of different curriculum models

On community involvement and motivation to pursue further studies
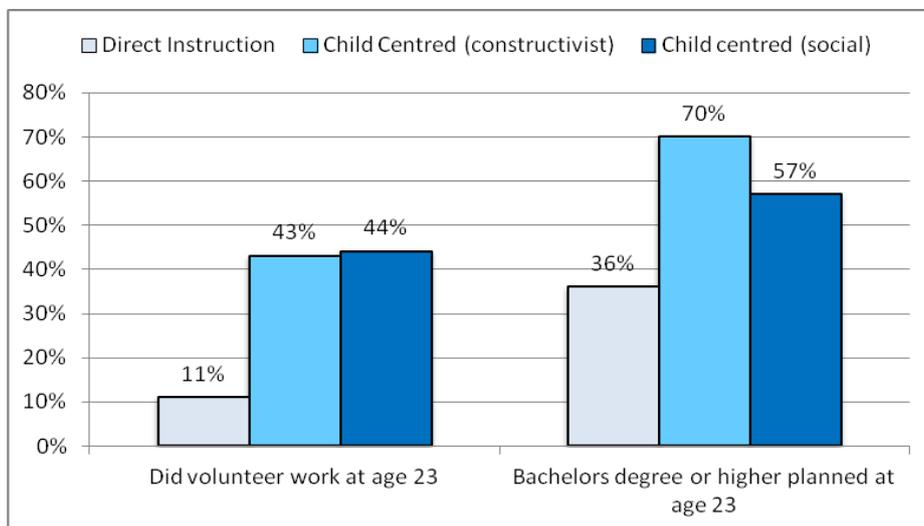
Note 1: Results are from a study of different curriculum models' impact on disadvantaged children in New Jersey. The sample groups are randomly selected and have comparable socio-economic and other background characteristics.

Note 2: "Child Centred (constructivist)" is a High/Scope curriculum model, "Child Centred (social)" is a Nursery School programme with a focus on social skills. Both curriculum models place stronger weight on child-initiated activities.

Source: Schweinhart and Weikart, 1997.

Teacher-initiated learning

Research demonstrates that teacher-initiated learning (common in the academic approach) can reduce early knowledge gaps in literacy, language and numeracy. Numerous studies have concluded that high-quality academic programmes involving explicit teaching can have positive short-term effects on IQ scores, literacy and math (Pianta *et al.*, 2009) (Table 1). These skills have been found to be strong predictors of subsequent achievement (Brooks-Gunn *et al.*, 2007). However, as pointed out above, child-initiated learning can have long-term benefits and is highly important for children's future social development. In order to maximise learning, development and social outcomes, it is suggested that ECEC curricula should combine child-initiated with teacher-initiated contents and activities (Sheridan, 2011; Sheridan *et al.*, 2009).

What are the policy implications?

Adapting curricula to local circumstances

A greater extent of local adaptation of curricula can reinforce the relevance of ECEC services. This can be especially important when "national" values or ideas on early childhood development are not shared by all (Eurydice, 2009). Co-constructed responses developed in partnership with teachers, parents, children and communities can greatly enhance the local appropriateness of curriculum aims and objectives (OECD, 2001).

Designing curriculum based on cognitive and neurological science

Cognitive developmental science and neurological research indicate that children learn certain things at particular ages, in a certain sequence. The "peaks" of brain sensitivity may vary across functions/skills as follows (Figure 2) (Council Early Child Development, 2010):

Emotional control and peer social skills

The brain sensitivity to development of emotional control starts from the middle level, increases to the high level from birth to around age one, and declines to the low level where it stays from age four. Peer social skills start with the low level, increase rapidly from ages one to two, gradually decrease and remain at a medium level from age four.

Language and numbers

Language development starts at the middle level, increases to the high level at around ages one to two, slightly decreases towards age four, and will continue to decrease towards the middle and low levels from then on. Numeracy starts with the low level, increases rapidly from ages one to three, gradually decreases but will be maintained at the high level from age four.

Figure 2. Sensitive periods in early brain development
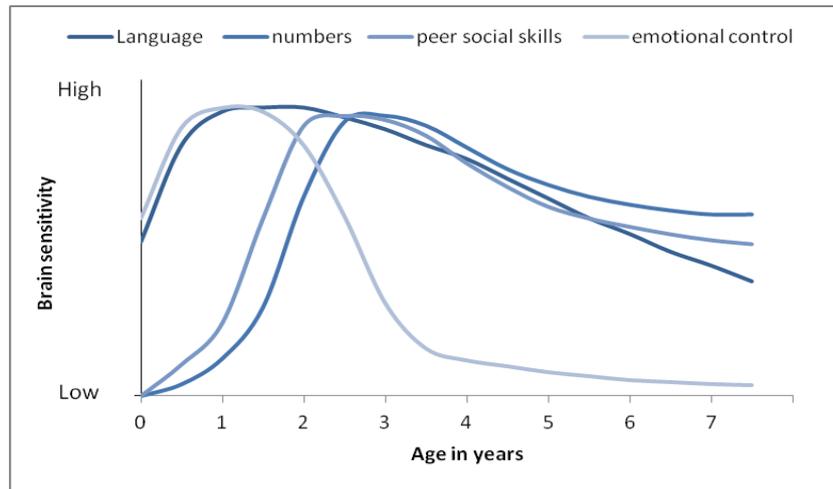
Source: Council for Early Child Development (2010).

Recognising the "virtues" of complimentary curriculum models

In practice, comprehensive programmes are thought to better facilitate a child-centred environment where learning builds on existing knowledge from children's perspectives. Children's priorities can be identified in a number of ways, for instance, children can be engaged in taking photographs of the most important "things" in the classroom. Experiments like these have been able to identify the importance of friends, staff, food and outside play. Other information-gathering tools, such as interviews, questionnaires and role-play, reveal that children like to finish their activities and appreciate support for periods of transition between activities (Clark *et al.*, 2003). Children can benefit from teacher-led interaction and formal instruction (Eurydice, 2009). However, play-based, as opposed to "drill-and-practice", curricula designed with the developmental needs of children in mind can be more effective in fostering the development of academic and attention skills in ways that are engaging and fun (Brooks-Gunn, 2007).

Considering national characteristics and ECEC structural factors

National characteristics and ECEC structural factors provide insight into the appropriateness of curriculum models. Where staff have little certification and training; and where ECEC provisions are fragmented, staff may benefit from added guidance and a more concrete curriculum. In countries encouraging child-centred activities and giving space to staff to create local innovations and adaptations, a child-centred model requires practitioners to be adequately qualified and trained to balance wide-ranging (and more abstract) child development areas. Thus, the chosen curriculum must be coupled with adequate staff training, favourable working conditions and appropriate classroom materials (OECD, 2001; 2006).

Ensuring sufficient and appropriate staff training

To enhance children's learning and development, (additional) staff training is needed on curriculum in general, but also on specific areas in which staff might need additional training support, such as multicultural classroom management and adaptation of curriculum contents to diverse linguistic and cultural groups. Furthermore, in a rapidly changing society, knowledge on the use of ICT is becoming more relevant, which can also facilitate early development, especially in reading (Judge *et al.*, 2006).

Ensuring that curriculum or standards are well-aligned for children ages zero to six and beyond

It is not only important that curriculum standards are present in ECEC environments but that they are well-aligned from ages zero to six, or even beyond: an aligned vision of ECEC contents can ensure more holistic and continuous child development.

What is still unknown?

Comparative advantage of different curriculum models

Table 1 compares the specific outcomes of "academic" and "comprehensive" curriculum models based on a selection of research findings. It remains unclear which of the two approaches produces the largest long-term benefits on health, college attendance, future earnings, etc. Geographical and political positioning has likely influenced the existing research: American researchers are more likely to support an academic ECEC approach, whereas the trend in Europe points to the importance of non-cognitive learning areas. More research is therefore needed to clarify the mixed research findings across different country-specific ECEC contexts.

Pedagogical strategies to support "play"

Most researchers agree that children's "play" is important for cognitive, social and emotional development. It has been traditionally integrated into subject-based learning, improving literacy, math and science outcomes. However, there is little differentiation between types of "play" (*e.g.*, social, pretend, object) that serve different developmental purposes. A lack of evidence leads many to unfairly separate play ("child-initiated games with no purpose") from curriculum ("teacher-initiated practices with useful benefits") (Bodrova and Leong, 2010).

Non-Western curriculum models and their effects

There is considerable literature on ''academic" and "child-centred" curriculum models as seen in North America and Europe. But a Western child-centred curriculum focused on individual benefits can actually contradict other value systems, including those who privilege group interests (Kwon, 2004). Thus, there is a need to research and diffuse alternative national curriculum models that are locally adapted and implemented.

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