



Teaching Sustainable Practices as Part of a Holistic Education in the Saudi Context

Ahlam Alghamdi^a, James Ernest^b, Fatimah Hafiz^c

^aUniversity of Alabama at Birmingham, ^bUniversity of Alabama at Birmingham, ^cUniversity of Alabama at Birmingham

Dr. Ahlam Alghamdi is an Early Childhood educator from Saudi Arabia. Had an opportunity to work with preschool children in Saudi Arabia and U.S. She is interested in multicultural education and seeks to extend the interest in DAP among Saudi educators to join global ECE community.

Dr. James Ernest is Professor of Early Childhood Education and the advisor for the PhD program at the University of Alabama at Birmingham. He is a strong advocate for developmentally and culturally appropriate pre-k practices and enjoys working with colleagues and students from a variety of countries.

Fatimah Hafiz is a Ph.D. student at the University of Alabama at Birmingham. She believes that a good quality Early Education is fundamental for future successes. Her ultimate goal is to help in developing Early Education in her country, Saudi Arabia.

Abstract

Children of every culture love to hear stories about their heritage. Storytelling creates shared experiences through the combination of time and space (Langellier, 2011). Educators and parents often use storytelling to explore characters, plot, setting, conflict, and resolution or other key elements of a story. From a more holistic view, storytelling is a teaching tool that is a natural way to teach about the environment and ethical and moral obligations to each other; it has the potential to create a social process that supports cultural survival (Rankin, Hansteen-Izora, & Packer, 2007). Storytelling can help maintain a sustainable culture, which is a basic element of a sustainable society (Abdul-Malik, 2012). Supplementing traditional benefits of storytelling, many activities and routines in early childhood lend themselves to broader discussions of sustainability. In this article, we will share an example of how sand and water activities have been used to support sustainable environments in Saudi Arabia. To do this, we explore how transformative and developmentally appropriate activities fit within a Saudi early childhood context, and provide examples of experiences that support a whole child approach to education.

Sustainability and Education

The term *sustainable development* was first proposed three decades ago (International Union for Conservation of Nature, 1980) and is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 43). Sustainability, in general, refers to thinking of a long-term goal of having a more sustainable world or “thinking about forever.” According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2005), sustainable development comes about when you have four interrelated and coordinated dimensions: ecologic, economic, political, and social stability. Ecological, or natural, sustainability considers resources, such as food and water, which support life. Economic sustainability is related to people's salaries, jobs, and income. Economic sustainability is best defined by its broad definition of maintenance of capital, or keeping capital intact. Political sustainability is concerned with the political system and political power's role in making decisions about social and economic consumption of natural resources. Finally, social and cultural sustainability deal with human rights and people's interaction through culturally appropriate aspects.

The role of education as a catalyst for sustainable development was proposed during the 1992 United Nations Conference on Environment and Development (UNCED):

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues.... It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making (Hopkins & McKeown, 2002, p.15).

Although it is well acknowledged that education is a critical practical tool for sustainable development (Manteaw, 2012), progress in the area of education for sustainable development (ESD) was limited until December 2002 when the United Nation (UN) announced the years 2005-2014 to be the Decade of Education for Sustainable Development (UN, 2015). Conceptually, education had been considered essential to help bring the four domains together (UNESCO, 2005), and more recently, research has provided support for education as the key to a nation's sustainable development (Gyberg & Löfgren, 2016).

The concept of ESD was originally described as “a world where everyone has the opportunity to benefit from quality education and learn the values, behavior, and lifestyles required for a sustainable future and for positive societal transformation” (UNESCO, 2005, p. 5). Within ESD, programs are developmentally and culturally appropriate and should consider the local environmental, economic, and societal and cultural factors (UNESCO, 2006). Teacher-education organizations have been identified as carrying the key to training and encouraging teachers to apply sustainability in their classroom, which will, in turn, globally impact the future (Alelaimat & Taha, 2013). However, without a shift in thinking about the pedagogical practices we use in education, teachers are not likely to consider a more holistic education that “aims at the integration of elements: self and world; mind and body; knowing and feeling; the personal and societal; the practical and transcendent” (Griffin, 1981, p. 111) while, at the same time, valuing ESD. To move beyond the traditional focus of reading, writing, and math, a promising approach to ESD integrates developmentally appropriate practices within a transformative model of teaching in education. As Samuelsson and Kaga (2008, p.14) believe, “Every child has the right to adequate care, learning, development and protection, and a sustainable society is where everyone's rights are recognized, respected and fulfilled.” Not only is engaging children in appropriate practices enough, but we should be developing a child's sense of responsibility toward a sustainable world.

Connecting Developmentally Appropriate Practice with Culture

In the 1987, the National Association of the Education of Young Children (NAEYC) released the first position statement about developmentally appropriate practices (DAP) for young children. The DAP guidelines are based on research and theories of how young children develop and learn. The guidelines provide teachers and care providers with examples of best practice in early childhood education (ECE) serving children from birth to 8 years old (Copple & Bredekamp, 2009). Since DAP's first edition, the guidelines have received criticism from professions in the field of ECE, with editions in 1997 and 2009 that have responded to the criticisms.

The universal consensus underlying DAP philosophy was the rejection of an education that focused on drill and practice and ignored higher level thinking skills (National Commission on Excellence in Education, 1983). Thus, the authors of DAP have advocated for a learning style that focus on the whole of the child using effective teaching approaches and practices. The learning style based on DAP guidelines is a child-centered pedagogy where the child is a center of the overall learning process (Samuels, 1994; Aldridge, 1992). Children in developmentally appropriate classrooms are seen as active learners, problem-solvers, and actions-takers (Stuhmcke, 2012). As DAP was initially based on a framework of well-known European theorists' views of child development and theory, questions have been raised about the relevance to children from different ethnicities (e.g., Delpit, 1988; Jipson, 1991; Kessler, 1991; Wien, 1995; Spodek, 1991; Lubeck, 1998).

The diversity of human culture and the wealth of social and traditional values has shaped the ways in which education has evolved in different parts of the world (UNESCO, 2009). Therefore, many see early childhood education as influenced by varied social perspectives deeply rooted in local culture and customs (Spodek & Saracho, 1996; Mallory & New, 1994; Hoot, Parmar, Hujala-Huttunen, Cao, & Chacon, 1996; McMullen, Elicker, Wang, Erdiller, Lee, Lin, & Sun, 2005). A shift in more recent versions of DAP emphasizes an awareness of cultural appropriateness and attention to the role of bringing children's culture to the classroom (Walsh, Sproule, McGuinness, Trew, & Ingram, 2010). To do this, teachers bring children's culture into the classroom by knowing what is culturally important to the children as well as listening with an open mind to family's preferences regarding child rearing and education (Copple, Bredekamp, Koralek, & Charner, 2013). As Copple et al. (2013) note, this is a shift to pluralism where educators "create a harmony in the face of differing practices, [and where] it is important to move away from viewing contrasting practices as right or wrong, instead thinking of them simply as different" (p. 20).

Even with the most diverse early childhood classrooms, teachers cannot have in-depth knowledge of the cultural dimensions of specific individuals or families. Indeed, teachers cannot have a detailed understanding of every culture they encounter in the classroom (Copple et.al., 2013). Culture is a highly complex concept and encompasses various aspects of human living patterns within a particular social structure. Culture is a complex term that "represents traditional and contemporary expressions of human achievement (e.g. language, art, tools, religious beliefs and practices, values, architecture, fables, traditions, customs and all other forms of human endeavors) that bind together groups of people" (UNESCO, 2012, p.16). Rather than teachers using a top-down approach to bring culture to a classroom, a goal of teaching for transformation to change the world to be a better place is a natural fit for ESD.

Transformation as a Model of teaching

Aldridge and Goldman (2007) argue that educational practices and approaches usually fall under three main categories: transmission, transaction, and transformation. Teaching as transmission considers teaching as the action of transmitting knowledge from the teacher's head to the student's head. As much social knowledge is transmitted (e.g., names of letters, remembering sequences such as numbers or months of the year), transmission works well if a teacher simply wants a student to repeat what a teacher tells them, often without knowing if a child understands the information they are repeating. The second model is teaching as transaction. Here, teachers guide students to construct their knowledge through investigation or exploration, often following their interests.

The third general model considers teaching as a transformative experience and one that leads to meaningful change. As an ancient Chinese proverb says, "if I don't change my direction, I will likely end up where I'm headed." In the same way, transformational teaching often begins with changing students' thinking in order to change their actions and follows a process of reflecting on what we learn and challenging our belief systems, which shifts our perspectives and assumptions. Transformational teaching is intended to change people's views of themselves and the world around them (Wright Knapp, 2013). As with transformative education, taking action is a key feature for DAP which encourages and supports children to be active agents in their own environments (Aldridge & Goldman, 2007). Teaching within a DAP framework supports teachers' decision-making skills as intentional in planning and practice, but also stresses building a caring community for learners, and establishing reciprocal relationships with families (Copple & Bredekamp, 2009). A good example of bringing DAP culturally sensitive practices together with transformational teaching, toward a goal of ESD is seen with how children learn about the importance of sand and water in Saudi culture.

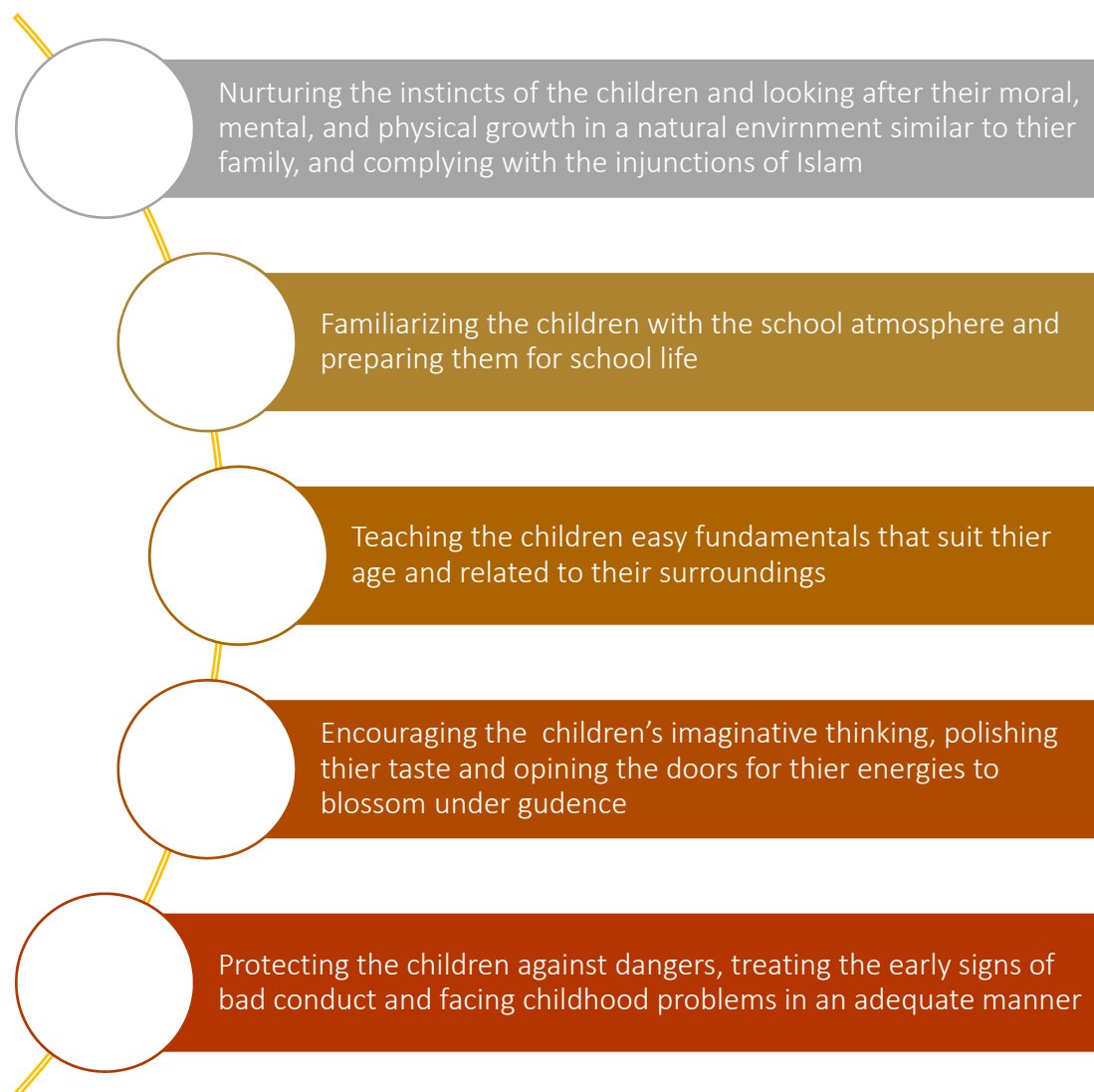
A Case Study of Saudi Arabia's Transformational Practices in ECE

Educational Influences in Saudi Arabia

Early childhood education in the Kingdom of Saudi Arabia is highly influenced by the unique religious characteristics of Saudi society. Saudi Arabia known as the most religious and conservative society in the Middle East and is also known as "The Land of the Two Holy Mosques" with Al-Masjid Al-Haram in Mecca city, and Al-Masjid Al-Nabwi in Madinah city. Geographically, where these two mosques are, gives the country a special responsibility among other Muslims nations as custodian for the most sacred places of Islamic faith. This religious significance in the country has shaped the identity and the nation's philosophy of education.

The presence of Islamic spirit and faith is strongly supported in all level of formal education and ECE. The education in the preschool years, known as kindergarten level, is the earliest stage of education and considers a general orientation for formal schooling (Al Sunbul, Al Khateeb, Matwalli, & Abdu Al Jawad, 2008). The Educational Policy in Saudi Arabia (1970) is used as a main reference for developing ECE programming. The document defines objectives and goals that serve as guidelines for preschool teaching. The objectives encompass different aspects of children rearing (see Figure 1) with a notable presence of cultural and spiritual values that mesh with the Saudi philosophy of educating young children (World Data on Education Report, UNSECO, 2010/2011, p.8).

Figure 1: The Main Objectives of Saudi Early Childhood Education



The curriculum implemented in preschool programs is the National Self-Learning Advanced Curriculum developed by the Ministry of Education in 2002 (Al Sunbul et al., 2008). The curriculum is based on three core considerations for Saudi preschool teaching. They are: a) suitability for children's developmental stage of physical, social, emotional, and cognitive growth, b) abundance of age appropriate learning experiences and hands-on activities, and c) considering children's present and future lives (Al Jabreen & Lash, 2016). All units and lessons are designed in theme-related experiences with a list of objectives and suggested activities with some room for the teacher allowing for flexible implementation.

The content of any learning unit falls under three categories: academic, vigorous, and religious contents (Al Hamed, Zayadah, Al Otebi, & Matwali, 2007). Academic content includes letters, numbers, and subject matter in different content areas (e.g., math, science, geography, history). Children's physical development includes outdoor/indoor play, hands-on activities and games. Religious content is integrated in the daily program through Qur'an recitation, daily supplication, and storytelling time, which mostly

relates to Hadith legislation (the Prophet Muhammad's legacy and teachings). Finally, the curriculum also advocates for teaching skills related to self-exploring, environmental observations, cooperative work, developing the spoken language, good conduct and manners, socialization, following rules, cleanliness and personal hygiene (Megren, 2003).

Recently, the country has witnessed major improvements in its educational system starting with the preprimary and preschool levels. Current educational reforms, associated with alternative ways to work with young children in the Kingdom, show a remarkable shift to a Western style of educating young children. The Saudi Early Learning Standards (SELS; Ministry of Education, 2015) reflect NAEYC standards and presents a new policy to support children's comprehensive development toward optimal learning while still considering Saudi culture and tradition. The SELS is a culturally appropriate package that respects Saudi Arabian policy regarding educational philosophy and at the same time is aligned with NAEYC's global vision of ECE around the world (Ministry of Education, 2015).

Water and Sand Learning Unit

Water and Sand is a learning unit for preschoolers taught as a part of the self-learning advanced curriculum in the Kingdom of Saudi Arabia. The ecological feature of the desert-like country is widespread and is part of a sand landscape that covers most of the Arabian Peninsula. It is known as one of the largest continuous bodies of sand in the world with a land surface of about 900,000 miles (Saudi General Authority of Statistic, 2017). The land is locally named *Rub Al-Khali*, or in English *Empty Quarter*, in reference to its dryness and extreme climate. Within this desert territory, the country is arguably the least water-secure region in the world. According to the World Resources Institute (2015), Saudi Arabia is considered one of the world's most water-stressed countries. The shortage of water resources have led the Saudi Ministry of Water and Electricity (MOWE) to initiate a national campaign for sustainable water consumption (Ouda, Shawesh, Al-Olabi, Younes, & Al-Waked, 2013). The campaign has received much attention from the educational sector in the country including preprimary and primary education.

Natural resources. The growing threat of water shortage and the nature of the geographical area makes water and sand two essential components of Saudi children's ecological surrounding. One of the main objectives that guides the Water and Sand unit is to help children develop a growing wealth of knowledge and understanding about the country's natural resources with special focus on water resources and conservation. Learning experiences designed for this unit include: watching a video of sea water desalination process in the kingdom, creating a poster about using water responsibly, and discussing ways of preventing the waste of water in school and at home.

History and culture. Sand, on the other hand, is a natural element of the planet and at the same time a dominant ecological feature for this specific environment. Essentially, sand is not only considered an elemental component of a child's immediate surroundings, rather, it is deeply connected to historically and culturally valued events of the country. For example, a hundred years ago, the home tent lifestyle was popular in the Arabian Peninsula region where modern Saudi Arabia is now located. With oil exploration, the rapid economic wealth has led to major transformational changes in the country. Valuing this transformation of the desert into modern society is strongly supported through education and the Water and Sand unit is an example of how history and culture are important parts of Saudi's philosophy of educating young children. Learning experiences associated with this unit reinforce children's participation in nationalistic behavior and traditional customs. Examples for some popular activities in a Water and Sand unit include: wear traditional clothes in dramatic play area, discuss ways people might adapt to live

in the desert, read a book about safety with respect to local weather challenges (e.g., sunstroke, sand storm).

Patriotism. Within Saudi policy, patriotism is an important dimension of educating young children. Children's emotional and cultural attachments help to develop a sense of national loyalty and is an important value educationally and culturally appreciated in Saudi Arabia. According to the Saudi Early Learning Standards (SELS, 2015), patriotism is a most important standard that is strongly supported throughout education and starts as early as the preschool years. As the document notes, "children begin to appreciate and take pride in the characteristics of their group, those characteristics become an important component of their sense of self, which will later develop into a sense of citizenship in the Kingdom of Saudi Arabia" (2015, p. 124). It is common to see children in Saudi preschools bringing the history of their great grandparent's generations to topics of interest in the classroom. Children are often seen building a tent with local materials, wearing traditional clothes, or sitting on the floor. All are customary activities that children enjoy in the dramatic play center.

Integrating Rich Cultural Texts with DAP Activities

One strong tradition of the Saudi preschool is to use stories as a powerful medium for mixing historical and religious teachings with social guidance. Saudi storytelling, as with many cultures, includes many historical references, but also includes very explicit connections to religious beliefs. These can be intentionally connected to current-day challenges as the following describes:

It is a storytelling time where children sit quietly on the carpet waiting for the teacher to read them a story. Ms. Amal walks toward the book shelf and chooses a book about how life began in the barren Arabian Peninsula. As she walks back to the carpet, Ms. Amal says to her children, “Are you excited to hear a story about a well that was originally dug by an angel from heaven?” As children stare at her with eyes filled with curiosity, Ms. Amal starts to read. A long long time ago, Prophet Abraham, his wife Hajer, and his son Ismael had a long journey. They walked and walked for a long time until they reached a desert of the Arabian Peninsula. They came to a very dry valley named Mecca. The valley had no sign of life, no trees, no food, and no water. Prophet Abraham, for almighty purpose, left his wife and son with little food and water and walked away. Hajer began to drink the water and eat the food that Abraham had left for her so she could feed Ismael her milk. But that water and food soon ran out. Hajer and his baby were so Hungry and thirsty. She looked for food and water but she couldn’t find any. She was running back and forth between two hills of Al-Safa and Al-Marwa seven times looking for people to help her. The last time she reached Al-Marwa hill, she heard a voice calling her. All of a sudden, she saw an angel digging the earth until the water flowed from the ground. Hajer tried to contain the spring water and shouted Zom Zom--meaning stop flowing--which was later named ZamZam. The water kept flowing and flowing and never stopped until this day.

After reading this type of story, teachers talk to children about conservation and the value of water and its relationship to sand. Children are then directed to a sand box. Values are connected to their religious teachings and help create the strong intergenerational bonds. The story of the abundance of sand and the need to respect water leads to children playing frequently with sand in the Kingdom. Each preschool has to have a proper sand area in its facility with appropriate equipment and tools in order to meet standards. The sand used is all purified natural sand regulated to 20 inches in height above the walking surface for children’s safety. Sand located in outdoor areas must be protected for the extreme hot weather by providing suitable shelter and appropriate air conditioning.

To prepare the sand for children, the sand's surface is commonly sprayed with some minimal amount of water to cool it down and allow opportunities for children to engage in manipulative play. Children are encouraged to take off their shoes and socks before entering the sand area; children benefit from playing with sand as much as they benefit from playing with water. Sand is a compelling source of pleasure for most children whether on a warm beach, attractive sandbox, or messy playground. Children enjoy sand as sensory learning and a joyful experience where children can see, touch, smell, hear, and more importantly, explore one of the basic elements in nature. Many conversations emerge as teachers talk to children about mixing sand with water to allow children to observe the physical properties of sand change in texture, consistency, smell, and color. Sand is an outstanding medium for many mathematical and scientific thinking skills and sand can play a valuable role in stimulating children's cognitive growth. Building, digging, scooping, sifting, or burying are all hands-on activities that build upon children's exposure to concepts such as counting, measuring, balancing, dividing, predicting as well as using various learning contexts such as heavy, light, more, less, or equal. Playing with sand works well for developing children's language and verbal communication. As children play with sand, they talk, negotiate, and exchange thoughts. This leads to children cooperating as a group which, in turn, enhances children's creativity and imaginative play. Moreover, playing with sand also supports children's physical development. Children are using physical energy as they interact with sand. When appropriate tools and props are provided, playing with sand is a fun way to develop children's gross and fine motor skills.

Conclusion

Children have the right to a well-resourced tomorrow. Education for sustainability could be meaningfully addressed by adapting approaches that see children as significant contributors to their environment. Providing children with learning experiences that encourage them to make a positive change in their environment is consistent with DAP and becomes a transformative education. Nature differs in its geography in different parts of the world which, in turn, is associated with a diversity in human culture, styles of adaptation, as well as ways to sustain natural resources. Recognizing children's curiosity about the world around them is a common theme in ECE throughout different parts of the world. Once coupled with educating young children about science and the environment, children have an instinctive desire to explore, especially when it comes to base elements like water and sand. The use of the Water & Sand learning unit can help with promoting sustainable ways of thinking about natural resources, and, in particular, consider the unique history and culture of the country of Saudi Arabia. The Saudi experience of how children engage in exploring and interacting with the Water & Sand learning unit can lead to sustainable practices that are environmentally, educationally, and culturally appropriate.

References

- Abdul-Malik, K. (2012). What is the role of storytelling in cultural sustainability? Four case studies. Master Thesis. Goucher College.
- Al Hamed, M., Zayadah, M., Al Otebi, B., & Matwali, N. (2007). *Education in the Kingdom of Saudi Arabia: Between present and future* [التعليم في المملكة العربية السعودية : رؤية الحاضر واستشراف المستقبل] (4th Ed). Riyadh, Saudi Arabia: Al Rushd Publications.
- Aldridge, J. (1992). Issues in developmentally appropriate practice and individual differences. *Journal of Instructional Psychology*, 19(2), 71–78.
- Aldridge, J., & Goldman, R. L. (2007). *Current issues and trends in education*. Boston, MA: Pearson Education/Allyn & Bacon.
- Alelaimat, A. R., & Taha, K. (2013). Sustainable development and values education in the *Jordanian Social Studied Curriculum*, 134(2), 135-153.
- Aljabreen, H., & Lash, M. (2016). Preschool Education in Saudi Arabia: Past, Present, and Future. *Childhood Education*, 92(4), 311-319.
- Al-Sunbul, A., Al-Khateeb, M., Metwali, M., & Abdu Al Jawad, N. (2008). *Educational system in Saudi Arabia* (8th Ed) [نظام التعليم في المملكة العربية السعودية]. Riyadh, Saudi Arabia: Al-Kheraiji Publications.
- Copple, C., & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs* (3rd. Ed). Washington, DC: National Association for the Education of Young Children.
- Copple, C., Bredekamp, S., Koralek, D., & Charner, K. (2013). *Developmentally appropriate practice: Focus on preschoolers*. Washington, DC: National Association for the Education of Young Children.
- Delpit, L. (1988). The silent dialogue: Power and pedagogy in educating other people's children. *Harvard Education Review*, 58(3), 280-298.
- Griffin, R. (1981). Holistic education: One person's perception. In A. Harris (Ed.), *Holistic education for living: Holistic education series*. Del Mar, Calif.: Holistic Education Network.
- Gyberg, P. P., & Löfgren, H. (2016). Knowledge outside the box: Sustainable development education in Swedish schools. *Educational Research*, 58(3), 283-299.
- Hoot, J. L., Parmar, R. S., Hujala-Huttunen, E., Cao, Q. & Chacon, A. M. (1996). Cross-national perspectives on developmentally appropriate practices for early childhood programs. *Journal of Research in Childhood Education*, 10(2), 160-169.
- Hopkins, C., & McKeown, R. (2002). Education for sustainable development: an international perspective. *Education and sustainable development. Responding to the global challenge. Cambridge: IUCN Commission on Education and Communication*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.378.4237&rep=rep1&type=pdf>
- International Union for Conservation of Nature (IUCN). 1980. *World conservation strategy: Living resource conservation for sustainable development*. Gland, Switzerland: IUCN. Retrieved from <https://portals.iucn.org/library/efiles/documents/wcs-004.pdf>
- Jipson, J. (1991). Developmentally appropriate practice: Culture, curriculum, connections. *Early Education and Development*, 2(2), 120-136.
- Kessler, S. (1991). Alternative perspectives on early childhood education. *Early Childhood Research Quarterly*, 6(2), 183-197.
- Knapp, D. W. (2013). Teaching as a transformational experience. *Journal of Physical Education, Recreation & Dance*, 84(6), 42-47.
- Langellier, K. (2011). *Storytelling in daily life: Performing narrative*. Philadelphia: Temple University Press.
- Lubeck, S. (1998). Is developmentally appropriate practice for everyone? *Childhood Education*, 74, 283–292.

- Mallory, B. L., & New, R. S. (1994). *Diversity and developmentally appropriate practices: Challenges for early childhood education*, (Eds.). New York: Teachers College Press. DOI: 10.1177/105381519501900108
- Manteaw, O. O. (2012). Education for sustainable development in Africa: The search for pedagogical logic. *International Journal of Educational Development*, 32(3), 376-383.
- McMullen, M. & Elicker, J. & Wang, J. & Erdiller, Z. & Lee, S. M. & Lin, C. H. & Sun, P. Y. (2005). Comparing beliefs about appropriate practice among early childhood education and care professionals from the U.S., China, Taiwan, Korea and Turkey. *Early Childhood Research Quarterly*, 20(4), 451-464.
- Megren, M. I. (2003). *Teachers' attitudes and evaluations of students with and without kindergarten education in Saudi Arabia*. Doctoral dissertation. Pennsylvania State University. UMI Number: 3114870
- Ministry of Education. (2015). *Saudi Early Learning Standards: Children 3 to 6 years old*. Tatweer Company for Educational Services.
- National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington DC: Department of Education.
- Ouda, O. K. M., Shawesh, A., Al-Olabi, T., Younes, F. & Al-Waked, R. (2013). Review of domestic water conservation practices in Saudi Arabia. *Applied Water Science*, 3(4), 689-699. doi:10.1007/s13201-013-0106-1
- Rankin, P., Hansteen-Izora, R., & Packer, L. (2007). *Living cultural story bases: Self-empowering narratives for minority cultures*. *AEN Journal*, 2(1). Retrieved from: <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=236514C1572597513031BAC72D26F6C9?doi=10.1.1.463.1426&rep=rep1&type=pdf>
- Samuels, V. J. (1994). Teacher beliefs and classroom practices regarding a curriculum that is multicultural and antibias. Doctoral dissertation. Iowa State University. Retrospective Theses and Dissertations.
- Samuelsson, I. P., & Kaga, Y., (2008). *The contribution of early childhood education to a sustainable society*. UNESCO; France. Retrieved from: <http://www.predskolci.rs/HTML/Literatura/ECE%20and%20sustantability.pdf>
- Saudi General Authority of Statistic. (2017). *Geographic Information System. Kingdom of Saudi Arabia*. Retrieved from: <https://www.stats.gov.sa/en>
- Spodek, B. (1991). Early childhood curriculum and cultural definitions of knowledge. In B. Spodek & O. Saracho (Eds.), *Issues in early childhood curriculum* (pp. 1-20). New York: Teachers College Press.
- Spodek, B., & Saracho, O. N. (1996). Culture and the early childhood curriculum. *Early Child Development and Care*, 123(1), 1-13.
- Stuhmcke, S. M. (2012). *Children as change agents for sustainability: An action research case study in a kindergarten*. Unpublished Doctoral dissertation. Queensland University of Technology. Retrieved from: https://eprints.qut.edu.au/61005/1/Sharon_Stuhmcke_Thesis.pdf
- UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Retrieved from: <https://sustainabledevelopment.un.org/post2015/transformingourworld>
- UNESCO. (2005). *United nations decade of education for sustainable development 2005-2014: International implementation scheme*. Paris: UNESCO. Retrieved from <http://unesdoc.unesco.org/images/0013/001399/139937e.pdf>
- UNESCO. (2006). *United nation decade of education for sustainable development 2005-2014: Education for sustainable development Toolkit*. Retrieved from <http://unesdoc.unesco.org/images/0015/001524/152453eo.pdf>
- UNESCO. (2009). *Investing in cultural diversity and intercultural dialogue*. UNESCO World Report. Retrieved from <http://unesdoc.unesco.org/images/0018/001847/184755e.pdf>

- UNESCO. (2011). *World data on education report, 7th edition* (2010/2011). International Bureau of Education. Retrieved from:
http://www.ibe.unesco.org/sites/default/files/Syrian_Arab_Republic.pdf
- UNESCO. (2012). *United nations decade of education for sustainable development 2005-2014: Exploring sustainable development: A multiple-perspective approach*. Paris: UNSECO. Retrieved from: <http://unesdoc.unesco.org/images/0021/002154/215431E.pdf>
- Walsh, G., Sproule, L., McGuinness, C., Trew, K., & Ingram, G. (2010). *Developmentally appropriate practice and play-based pedagogy in early years education: A literature review of research and practice*. Retrieved from:
http://feedback.ccea.org.uk/sites/default/files/docs/research_statistics/early_years/Literature_Review.pdf
- Wien, C. A. (1995). *Developmentally appropriate practice in "real life"*. New York: Teachers College Press.
- World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.
- World Resources Institute. (2015). *Aqueduct projected water stress country rankings*. Retrieved from:
<http://www.wri.org/resources/data-sets/aqueduct-projected-water-stress-country-rankings>