

Examining Children's Learning Styles: a Focus on the Teaching and Learning of Science at Early Childhood Development (ECD) Level

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Abstract: Different models of learning styles have been used to explain how children learn. The common learning styles refer to different behaviours that include the activist, theorist, pragmatist, and reflector. Other scholars have classified learning styles in terms of the dominant characteristic in the learner. These have classified learning styles in terms of the learners, namely auditory learner, kinaesthetic learner and visual learner. Within the context of learning styles, the paper provides a conceptual framework by looking at the different types of learning styles. It further examines the role and implications of these learning styles to how teachers have to cater for individual differences in the development of children at Early Childhood Development (ECD) level. The paper also focuses on different methods the teacher can use to promote learning in all children. Such methods include activities that make the child the centre of learning. These include discovery, experimentation, outdoor play, drama, role playing, story-telling, group work, listening to stories and other related practical activities. The paper concludes that there is need for balanced activities that cater for children's different learning styles and development levels.

Keywords: Learning styles, Early Childhood Development (ECD), teaching and learning, teacher.

Introduction

Learning styles are meant to establish the strengths and preferences of children at ECD level. Different models of learning styles can be used to explain how children learn at ECD level. The paper identifies the different models of learning styles that are important in the teaching and learning of Science at ECD level. The main focus is on the role of the teacher and how the teacher can utilize his/her knowledge of the models of learning styles in the delivery of instruction in Science at ECD level. The following key terms are defined: learning styles; and ECD level.

Definition of Terms

Pandya [1] defines learning styles as the learning strengths and preferences by pupils. Brizuella [2] defines learning styles as various approaches or ways of learning. There are similarities in the content of the two definitions. Both focus on the methods that are used in teaching and lesson delivery in order to meet the child's expectations. Learning styles are therefore any activities that are meant to meet the cognitive, physiological and other related needs of children.

Gupta [3] defines early childhood development as changes in personality and behaviour that occur right from the moment of birth, which are characterised by

growth which is seen as a product of hereditary and environmental influences. Such development contributes to the acquisition of skills, attitudes and relevant values as the child grows. Mishra [4] defines early childhood development as a wide range of programmes that aim at the physical, cognitive and social development of children from birth to eight years. The key elements in the two definitions are that early childhood development occurs right from pre-primary school level to the early years of primary school and that it focuses on the stages and programmes that contribute to the proper management of these stages of growth and change in children.

The rationale for teaching and learning Science at the earliest stage

The rationale for teaching and learning Science is found within the methods of teaching and learning the subject. These methods include experimenting, observing, discovering, measuring and inferring among others. Through the different methods of learning Science, children are able to discover the real world. Through observation and experiments, children develop concepts. McGrath [5] notes that Science as a subject helps children to develop skills that they will later use in adult life. Science develops children's thinking. Science contributes to the development of skills such as

basic process skills, intermediate process skills and advanced process skills. These skills include different activities that contribute to the growth of the child. The activities that come into mind are observing, comparing, classifying, measuring, experimenting, and hypothesising. The teaching of Science is guided by the utilisation of the environment as children learn through observation, investigating and manipulating objects.

In addition to the above, the teaching and learning of Science develops different physical skills, emotional skills, social skills as they work with other children, cognitive skills as they learn basic scientific concepts and skills, technological skills as they learn to interact with technological gadgets such as computers, and laptops among other gadgets. Furthermore, if we want to promote scientific reasoning we have to expose children to the principles of science at an early age. Developing countries in particular, are short of scientists. There are therefore attempts to invest more in pure science education than the social sciences. For example, as a way of promoting the learning of Science subjects, with effect from 2016 the government of Zimbabwe, started paying school fees for all students enrolling for lower six.

This is indeed a welcome development in terms of encouraging students to take up Science subjects at Advanced level and at university. It is important that children develop a positive attitude towards science at an early stage in their lives.

Children's learning styles and the role of the teacher in teaching and learning

Honey and Mumford [6] identify and classify learning styles into four categories. According to them the categories are activist, theorist, pragmatist and reflector. An activist learns by doing and is practically involved in the learning. They are interested in such activities as role-play, competitions, puzzles, problem solving and group discussions. On the other hand, Honey and Mumford [6] view theorists as learners who focus on the theory behind an action. For them to learn they need models, concepts and facts. Activities for this learning style include the use of models, stories, statistics, quotes and the application of theory [6].

Another category of learning style is the pragmatist. These according to Honey and Mumford [6] are concerned with putting learning into practice. They are concerned with the transfer of learning. They are interested in experimenting as this enables them to try new ideas. Those in this category of learning style enjoy exploring the environment. Activities that help them to learn in this learning style include activities that involve applying learning to real life situations, case studies, problem solving and discussions.

Another learning style as noted above is the reflector. According to Honey and Mumford [6] children who fall within this category learn by observing and thinking about what has taken place. They consider solutions from different perspectives, based on collecting data and reaching conclusions based in the data. They use activities that involve paired discussions, observing activities, feedback, and coaching [6].

Leslie, Perry, and Landrum (2000) as cited by Pandya [1] identify at least three models of learning styles that can guide a teacher in the teaching and learning of Science at ECD level. These models are the instructional preference models, information processing models, and personality characteristics. According to Dunn [7] instructional preference models are based on environmental preferences, emotional preferences, sociological preferences, physiological preference and psychological preferences. Children can therefore fall within any of these elements that have an effect on their learning preferences.

However, Dunn [7] place emphasis on the learning style model. According to Pandya [1], the learning style model as postulated by Dunn and Dunn suggests that "each individual has a biological and developmental set of learning characteristics that are unique [and] improvements in productivity and learning will come when instruction is provided in a manner that capitalizes on an individual's learning strengths". The role of the teacher for effective teaching and learning is to adjust his/her approach to accommodate the child's learning style. The views by Dunn and Dunn mean that the teacher has to consider individual differences among children when planning and teaching a Science lesson.

Kolb's learning style model contains key elements that play a very important role in teaching and learning. An awareness of these modes on the part of the teacher at ECD level assists the teacher in planning for different children who have different learning preferences. The model contains the following modes: concrete experience; reflective observation; abstract conceptualization; and active experimentation (ibid). The different modes cover a wide range of personalities that can be found within an ECD class. The teacher has to assess the children and establish their learning styles. The teacher has to come up with teaching methods that fit into the children's learning styles.

Charlesworth and Lind [8] also note the importance of Fleming's VARK learning style model. VARK is an acronym for visual learners, auditory learners, reading (writing) learners and kinaesthetic (active) learners. According to Mawere and Musiyiwa [9], Fleming observed that visual learners learn best through what they see, auditory learners through listening and kinaesthetic learners learn through

exploration and experiencing things. These have wide implications for a Science teacher at ECD level. Children have to learn through different teaching methods and approaches. Such approaches include the use of visual objects that can include the actual artefacts being observed and studied. For example, if children are studying plants, they have to see the actual plants. They can identify parts of the plant as they observe the plants. The same lesson can involve manipulative and block play area, and science and discovery play to cater for the different children's learning needs. To cater for those who prefer auditory learning, the teacher has to plan for children to discuss in groups as a way of developing their verbal skills. Children can be asked to describe properties of water whilst others listen. They do this in turns. They can identify sound from different materials and animals. The teacher can also make use of modern technology such as tapes, radio, video games and tele-conferencing.

The teacher also has to plan for kinaesthetic learners who learn best through touching, movement and doing. They learn through music and dance in naming human body parts. They can also help in gardening activities and in the Science and Discovery play area. They can use toys to manipulate as they learn, compare soil grains as they feel and touch. As noted by Clements and Sharma [10] the teaching methods the teacher adopts should provide opportunities for children to explore and discover, so that they learn by doing. Sharma [10] observes that Science is a practical subject which children learn by doing through observation and experiments.

However, we should be aware of the pressure that such demands exert on the teacher. This may mean planning different lessons and activities for children in the same class. Such expectations also exert pressure on the resources to be used. The support of the school head and community becomes crucial if the teacher is to be successful in teaching as expected in different learning styles.

Implications for the teacher

Learning styles are determined by the areas in which the pupils are strongest. These are visual learners, auditory learners and kinaesthetic learners. These learning styles have an effect on how different children learn. The role of the teacher is to plan for activities within the classroom set-up that cater for the individual differences in children with different learning styles. The differences demand that when teaching, teachers have to provide for the different categories of pupils in the classroom. The different learning styles demand that the teacher engages different approaches and methods of teaching. For the visual learner it is important that the teacher facilitates learning by the use of objects that enhance the acquisition and development of concepts in the child. For example, in the teaching of

Mathematics, the use of objects and pictures can enhance the child's concept on addition or subtraction. Children can learn counting by using the real objects.

The other learning style focuses on the auditory learner. This implies that the child in this category learns best through what he/she hears. The teacher has to plan for lessons that promote listening. Such activities include the promotion of group work. Children work in groups where they learn to listen to others and to be listened to. Activities to cater for the auditory learner include story-telling and reading. Such activities should involve the child much more than the teacher. The teacher has to guide in the activities while children play the most active role. When children tell their own stories, they develop both oral skills and listening skills.

The teacher has to plan and provide resources and facilities for the kinaesthetic learner. Such a learner has to be an active participant in the learning process. Such resources can come from the local environment through the involvement of parents and communities in school activities. These activities include providing children with opportunities to conduct experiments and to make discoveries. The teacher has to promote outdoor play and ensure that the outdoor play centre is well equipped. The teacher can get outdoor play equipment from the community if the parents are involved in the development of the centre. Good community relations play a pivotal role in the development of the school and ECD centre. To cater for the kinaesthetic learner, the teaching methods have to promote practical activities, outdoor activities and field trips.

The different learning styles have to be promoted by the teacher through the use of different teaching methods. The central issue in teaching at any level is that the child is the centre of learning. At early childhood development level the need to provide the child with a learning environment that allows the child to discover, explore, manipulate and experiment becomes much greater than in adult learners. Such activities promote the acquisition and development of different skills at a tender age. These contribute to different forms of development within the child which include social development, cognitive development, language development, moral development, and physical development. The teacher has therefore to develop the cognitive domain, psychomotor domain and the affective domain through the different activities that he/she has to expose children.

The teacher has to plan for the different styles of learning that are found in children. An analysis of the different methods that are suggested in the Early Childhood Development (ECD) syllabus, as provided by the Ministry of Education in Zimbabwe, are

supportive of promoting the different learning styles found in children. To promote the different learning styles, the Ministry of Education advocates for the following methods of teaching and learning: discovery, experimentation, debates, discussions, word games, poems and rhymes, telling and listening to stories, song and dance, role play and drama, group projects, demonstration and field trips. A close look at the different methods and activities that are suggested indicates that the different methods cater for a variety of learning styles. These learning styles include auditory learners, visual learners, kinaesthetic learner and the reading learner.

However, whilst it is significant to take care of children's learning styles it can be argued that children can adapt to different learning styles as long as the environment is conducive. In that regard, if the environment is captivating, the child can adapt and acquire new learning styles.

Conclusion

The paper has identified the different learning styles that can be found in children at ECD level. These have been discussed in relation to different learning style models that have been advanced to explain different preferences in children towards learning. The paper further focused on the different methods that can be used by a teacher in recognition of the different learning styles in children at ECD. The paper notes that Science is a practical subject, and as such children have to explore, discover, observe, and share ideas as they learn. In conclusion, it can be noted that there is no one particular teaching and learning method that suits all children, and as such the teacher has to vary the teaching methods to cater for different preferences among children. Furthermore, the paper noted that the environment has a role to play, not only in promoting the children's learning styles, but developing a positive attitude towards different learning styles as they work in groups.

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