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Parental Perceptions of STEAM Education of Early Childhood Education for Social Development:A Case of St. Joseph Kindergarten Asmara Eritrea

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Samson Kifletsion Elias[1*], Francis Stonier[2], Irene Musengamana[3]

[123]Faculty of Education, Southwest University, Chongqing, China

Corresponding Email: *samsonkifletsion2@gmail.com

Abstract

In the twenty-first century, parents face the most intense competition in raising gifted kids with high STEAM (Science, Technology, Engineering, Art, and Mathematics) quality who are prepared to take on difficulties, and kindergarten is the foundation for this holistic life of the child. However, there can be no meaningful social development without parental involvement in the child's STEAM education. The current study examines how parents view STEAM education for young children in Asmara, Eritrea's St. Joseph STEAM-integrated kindergarten to ensure healthy social development. The study used mixed techniques to identify parents' perspectives toward STEAM education and how it affects their kindergarteners' academic and social/emotional growth. It also investigated the barriers that prevent parents from becoming involved in their children's education. The quantitative data was gathered from thirty parents (n=30). On the other hand, semi-structured interviews with fifteen parents involved them. The results showed that in the kindergarten used in the case study, parents were seen as being involved at home and paying for the child's transportation and school expenses. Furthermore, it was discovered that parents encourage their kids' social and emotional growth. In addition, the study discovered a few characteristics that influence parents' perceptions of STEAM education in kindergarten, including a lack of STEAM education knowledge and awareness, a lack of time for a child's follow-up, low parental income, low educational attainment, and a lack of someone to watch the other kids. Furthermore, the current study recommends further research that incorporates various types of kindergartens with different parents to enrich the data on parental perception of STEAM education in Eritrea.

Keywords: STEAM, Parental perception, Early Childhood Education, Social Development, Eritrea

INTRODUCTION

Kindergartens are classroom program that consists of children aged from four to six years, with a program range from half day to full day of school depending on the availability of the classroom and the school system in which the fundamental step toward the development of physical, psychological, and social skills for children in addition to their basic STEAM skills (Hunter-Doniger, 2021; Webster-Stratton & Reid, 2004). In addition to their designed place where children can grow and learn social interaction with other children, they are places for sharing teaching objectives, such as STEAM skills, social interactions, and self-esteem. In addition to this, it enhances children's academic abilities such as writing, listening, and pronouncing alphabets and words where their media communication is mainly learning and sharing experiences through early child's STEAM education and playtime (Coggio, 2023; Powell et al., 2010; Spyropoulou et al., 2020).

It is believed that the term kindergarten was developed by Friedrich Frobel, who opened the first kindergarten in Germany in 1837 (Coggio, 2023). At that time, Frobel established this kindergarten to help children who were poor and had social needs. The founder had some social

experiences to share with children by taking them from home to school. The main goal of Frobel was that children should be treated and nourished like plants in a garden. His kindergarten developed theories and practices used today in kindergarten classrooms. This indicates that kindergarten was established a long year ago. Kindergarten is believed to be the most important and basic education for children, dating as early as the first quarter of the 20th century. It is cognizant that preschool programs play great roles in children's learning and development (Hohmann et al., 1995). It makes the children competent in his/her academic and social skills. Thus, the public's awareness of the importance of STEAM education in kindergarten should be enhanced to prepare students for future generations (Kennedy & Odell, 2014).

Parents should be involved in improving the child's learning in preschool. Good parental perception of STEAM education at kindergarten helps children develop pre-literacy skills (Anderson & Minke, 2007; Arnold et al., 2008; Keating et al., 2022). Parents involved in school STEAM activities may establish connections between teachers and parents of other kids. In this case, parents may positively influence teachers' impressions and good views about their student's development. According to Jafarov (2015), when there is greater parental belief in their children's STEAM education, there is a greater contribution to the child's emotional and behavioral development. The child's future is also greatly influenced by the collective STEAM work at home and school (Anderson & Minke, 2007). The discipline of the child starts with family at home. Parents are responsible for shaping their children's behavior, and they can give powerful support to STEAM programs. Moreover, the educational contribution of homes, schools, and religious institutions such as churches and mosques are relatively decisive in the educational development of children's learning. The collaborative efforts of those stakeholders enable children to learn effectively and to achieve qualitative performance in their outcomes.

According to (2020), parental STEAM education perception is not a highly researched area, and many scholars haven't researched it in different contexts and cultures. Their study indicated that the characteristics of parental perception of STEAM education in different countries are distinctive and have contextual differences. In the case of Eritrea, little research has been done on parental belief in STEAM education at kindergarten. But as in a similar example of sub-Saharan Africa, Gahanna, with a similar situation family level economy, low family education, and large family size, the parental involvement at elementary and middle school is similar in

Developing countries (Bethell, 2016; Donkor, 2010). Therefore, the current study is focused on parental attitudes toward STEAM education in kindergarten for children's social development in Eritrea.

In Eritrea, three types of kindergartens exist. They are governmental, profit-oriented, and non-profit oriented. The general goal of Eritrea kindergarten education is to enhance the development of STEAM knowledge, skills, and attitudes, which is appropriate for young children to facilitate critical thinking and self-esteem and develop children's reading and writing abilities by integrating STEAM curriculum before starting elementary school in a way that will ensure a successful learning career or profession.

The Ursuline sisters (Catholic congregants) run non-profit-oriented kindergartens in many towns and villages of Eritrea. Two of these are located in Asmara: St. Angela kindergarten, located in Gaza-Banda, inside the sister's institute, and St. Joseph kindergarten, located behind the church of St. Joseph near the Asmara Stadium that was established in 1964. At first, that kindergarten aimed to keep orphaned children and the poor ones. Then, later, it extends to the present day of kindergarten with relatively adequate teaching aids. Besides this, Tigrigna was introduced as a medium of education in 1970. Moreover, the need for kindergartens has increased with the number of children attending preschool. Since 1996, the kindergartens have taught an average of 225 children in two shifts. Indeed, the number of teachers and related workers has significantly increased since that time.

The school St. Joseph has four large and comfortable classrooms. According to the school's statistical report, in the current academic year 2019/2020, this kindergarten has 387 students. Half are females, and the students are classified according to age. The age range between 4 and 5 is in the first year, while the rest of the 5 to 6 age range is placed in the second year. The students attend in morning and evening shifts. Requirements for admission to this kindergarten include a birth certificate and vaccination card for adequate information about the student's background (History of Ursuline sisters' Kindergarten from 1940-2010, May 2008).

On an international scale, parental perception of STEAM education in school has long indicated a positive variable on children's academic and socio-emotional development. From an ecological framework perspective, reciprocal positive interactions between these two key socializing spheres – families and schools on STEAM integration role – contribute positively to a child's socio-emotional and cognitive development (Váradi, 2022).

A child who enters school is greatly influenced by various experiences available to his/her parents and community. Upon entering school, the child already has several years of training in the family as background for STEAM learning. Then, in the home life of the child, the parents have observed different creativity, interests, habits, and or temperaments of their children, and they share their experiences with the school teachers to satisfy the development of the child as a whole (Đurišić & Bunijevac, 2017).

Awareness of the parents towards the learning significance of STEAM education in kindergarten is very important. Parents should be aware of bringing their children to STEAM-integrated kindergarten and follow them. They should know that preschool STEAM education is very important for their children to be social with other children and to be confident in higher grades. Then, to become effective, the outstanding perception of parents on STEAM education from the last stages of the development process is necessary. However, Eritrean society does not give more attention to the need for parental involvement in STEAM education. Thus, the researcher wants to identify in what STEAM activities parents are involved in and examine barriers to parental STEAM education perception. The current study is developed to address the following research questions.

1. In What activities do parents engage in their child's STEAM education at kindergarten for their child's social development?
2. What perception do parents have in early childhood STEAM education for development of social and emotional development?
3. What are the barriers/challenges that hinder parents from STEAM education in their child's education at kindergarten?

The main objective of this study is to examine the parental perception of STEAM education in their child's kindergarten education for social development. Moreover, the specific objectives of the study are to:

- Scrutinize the level of parental STEAM activities engagement in children's education at kindergarten.
- Identify the role of parents in a child's STEAM education social and emotional development.
- Find out the barriers/challenges that hinder parents from playing their important role in STEAM education in their child's education at kindergarten.
- Suggest some possible solutions that enhance and promote parental perception of STEAM education in their child's education at kindergarten.

The study will be important for the Ministry of Education, society, parents, and teachers in their effort to learn for better quality education for students by integrating STEAM education into early Child development. The enormous depth and breadth of collective STEAM experience and knowledge in a community can be built on the bridge of change and improvements in the quality of education and future development of the child. When parents/people understand STEAM education challenges and problems, they will be more readily able to act and solve them. Therefore, the schools should be given a chance for active

STEAM education participation by the parents, and they should also receive corrective feedback on the constructive STEAM learning environment. It can also contribute literature in the school and serves as a base/ground for further study as a reference to early child STEAM education for schools and parents.

The development of STEAM education in kindergartens in Eritrea

In Eritrea, there are five levels of education. These are kindergarten (pre-primary), lower primary, middle, secondary, and tertiary education. Since the current study is about parental involvement in kindergarten, in this chapter, the researcher will discuss kindergarten education. Today, there are more than 400 kindergarten schools throughout the country, Eritrea. The contributions of those schools are immeasurable as they work for the holistic development of a child and the community's development (Fessehatsion, 2017).

After Eritrea gained its independence in 1991, the number, quality, and accessibility of kindergartens flourished to the present development of kindergarten. In Eritrea, kindergarten is the most important and compulsory education for children under the age of 6 years. Kindergarten was started during Italian colonization. The first kindergarten was built in 1932 in the capital city of Asmara at Akria by Daniel Cambonie's sister. It aimed to educate the soldiers' children. Later on, during the Ethiopian colonization period, its development expanded and started to serve more children. Amid its increasing strides towards globalization, Eritrea has faced real challenges in its efforts to reform its educational system to be in balance with those of other nations. Over the last two decades, Eritrea made significant attempts to reform its education system by giving more attention to STEAM content without explicitly mentioning the acronym. (Rena, 2008; Zerai et al., 2023).

Schools should involve parents in everyday STEAM planning and invite them for feedback, suggestions, and ideas to share. Work in partnership with families to ensure their culture is reflected in the setting. The schools should aim to involve all members (family of the child) in the participatory process of investigating their environmental situation, visualizing a different future, and taking action to implement change (Jensen, 2009). This is because people solve their problems best in a participatory group process.

The child's natural development is a close relationship with families and the environment. Then, families' participation can be the basic need for a child's STEAM education. For children's playing and learning materials that may be available from parents, their active participation in providing natural sources will increase their involvement in school service (Đurišić & Bunijevac, 2017; Zamarro, 2011). Therefore, before we see the benefit of parental

involvement toward a child's development and school's outcome, it is better to explain what parental involvement is.

Parental involvement and perceptions of STEAM education

Parental perception and involvement in STEAM education is a combination of beliefs, attitudes, commitments, and active participation on the part of the parent to the school in STEAM education for their children's development (McDowell et al., 2018; Tay et al., 2018). The difference between parental perception and parent engagement in STEAM education put, parent involvement is often more of a "doing to," while perception is a "doing with." With involvement, schools tend to lead with their mouth -- generally telling parents what they should be doing. Engagement, on the other hand, has schools leading with their ears. Parental involvement in STEAM education also refers to the amount of participation a parent has in schooling and their child's life. Some schools foster healthy parental involvement in STEAM through events and volunteer opportunities, but sometimes, it's up to the parents to involve themselves with their children's education. Continuous follow-ups of educational STEAM activities of the child at home by the parent are prominent (Mart, 2021; Orillosa & Magno, 2013). According to Lau et al. (2011), great parental efforts on STEAM during preschool education help improve a child's readiness to practice his interactive problem-solving skills in Science, Technology, Engineering, Art, and Mathematics as well as on a daily life basis. In addition, it helps to engage actively in teaching and learning by reducing stress, enhancing a child's social skills, and promoting academic success. Therefore, positive parental STEAM belief is very important to change the attitude and play a role in the child's social and academic development (Wan et al., 2021). There is a positive relationship between parental STEAM education perception on the child's social development and academic success, children's self-esteem and effective development, and child social development and interaction (Eccles & Harold, 1993; McDowell et al., 2018). Determining the relationships between schools, parents, and the supervision of STEAM education schools is crucial.

Families are the basic social unit in every society, culture, and nation. The role of families in a child's development is beyond limits. The fundamental element of a family is the parents. Child development refers to the biological, psychological, and social changes that occur in human beings between birth and the end of adolescence as individuals progress from dependency to increasing autonomy. Because these development changes may strongly be influenced by genetic factors and events during parental life, genetics and parental development are usually included in a study of children's development. Pre-primary education especially contributes a lot to all kinds of child development.

Parents have the right and responsibility to be included in their children's STEAM education. They have valuable contributions to make and are an essential part of the school community. The benefits of parental involvement in STEAM education are: a growing body of research shows that successful parental involvement improves not only student academic achievements and attendance but also positively affects student pre-academic skills and intellectual development (Bandura, 1993). Yet many schools struggle to define and measure meaningful parental STEAM education involvement, and many don't feel that their efforts are successful.

Families can and should determine their priorities in dealing with the STEAM activities their children face and engage in. A child's STEAM classroom performance and academic achievements are significantly influenced by the involvement of parents in their STEAM activities. Families are the first and most important educators of children; if the reality is what we see above, the parents of the child are educated on how to support best the children's development (Pestalozzi, 1827).

Parental support on STEAM education of early child education is widely recognized as a crucial determinant of the parents knowing what is best for their children, therefore, their contributions can be uncountable to become effective academic performances (McNeal, 2015; Salvatierra & Cabello, 2022). Teachers should communicate continuously with parents about their children's STEAM progress, pre-academic skills, intellectual development, general awareness, and the like. It benefits the child if both the teacher and parents are working together and staying in touch with each other to find out how the child is doing on STEAM and where they need help. Parents can encourage children and teachers to contribute ideas, interests, and questions to the STEAM learning environment (Jafarov, 2015; Salvatierra & Cabello, 2022; Thomas et al., 2020).

Healthier behavior Kids develop better social skills and show enhanced behavior when their parents are involved in STEAM education at the school. Parent involvement can help expand the quality of schools, raise teacher morale, improve a school's reputation in the community, and minimize the bad academic performance of pupils. It has also been initiated to be associated with constructive STEAM activities attachment on the part of children.

Despite these positive impacts of involving parents in the STEAM educational system, there are still problems in educational achievement between children with parental STEAM support/involvement in school and those without. To build on the child's current knowledge, the kindergarten program is the base of all development. To become effective in this process, the main inputs are communities and families. The main entrance to engaging parents is

receiving in the STEAM education school through stakeholders, and they also need to partake in decision-making with teachers in the school (Ata-Aktürk & Demircan, 2021; Choy et al., 2022).

The proper role of the parent is to provide encouragement, support, and access to activities that enable the child to master key developmental tasks. A parent is their child's first teacher and should remain their best teacher throughout life (Mercan et al., 2022; Vartuli & Winter, 1989). Though parents' understanding and educational experience varies from one family to another, their contribution is uncountable and has universal acceptance. Parents are also the core of early childhood education. The early childhood staff shares the responsibility of socializing young children with families. It is important to provide children with a sense of continuity between home and school experiences, which can best be assured through a carefully raised partnership between the family and the early childhood program. This perspective makes good communication between home and school an imperative, not a choice. One of the most important needs of working parents is high-quality, reliable care for their young children. Then the school should welcome all parents and consider them as partners in a children's education.

Social Development of the Child

As a child passes from infancy to preschool, his/her social development becomes increasingly more noticeable and complex, paralleling growth along other lines. Maturation and learning, in general, are important factors contributing to his social development. The child passes through the preschool years he/she comes to take on certain maturity patterns of behavior, such as speaking to another child, joining a group of children in play, asking another child to wait his/her turn, defending their right to materials or place and they confronting another child in distress.

They do not avoid one another during play time instead, they become happy and enthusiastic. They share their belongings of playing materials like balls, toys, and building blocks (Choy et al., 2022; Ladd, 1990; Thomas et al., 2020). The formation of friendships during the first five years, as nearly as can be told from available evidence, children are naturally friendly and genuine. This is the outcome of environmental and traditional influence that enables them to approach everybody without any discrimination. Children learn good manners from extended families that live in their surrounding places. Every adult starting from their parents, brethren, and neighboring people is responsible for forming a child according to their customs and values.

Emotional competencies, in turn, are vital for successful peer relationships and overall mental health (Garner, 2010; Monkeviciene et al., 2020). By the age of 4 to 6, children correctly

judge the cause of many basic emotions. When asked why a nearby playmate is happy, sad, or angry, they describe events similar to those identified as adults and that fit the emotion being expressed. Preschoolers are also good at predicting what a playmate expressing a certain emotion might do next. For example, they suggest they know that an angry child might hit someone or grab a toy back and that a happy child is more likely to share; they suggest physical comfort, such as hugging, to reduce sadness and giving a desired object to a playmate to reduce anger. Therefore, the parent should be attentive to their child's emotional needs and priorities in their life.

The barriers to successful parent involvement in STEAM education

Parents may have different problems preventing them from becoming more involved in their child's STEAM education at home and school (Bybee, 2013; Hornby & Lafaele, 2011). According to Bennett et al. (2018), taking care of younger children, working full-time jobs, and lack of awareness of how to get involved at home are some barriers that hinder parents from involvement. Low income also affects the involvement of parents in their child's education. In addition, it has been described by Pena (2000), that parents with high-income status involve more in their child's education and thus, their child succeeds in school (Bennett et al., 2018; Bhargava & Witherspoon, 2015). This revealed that high-income families are providing quality educational opportunities for their children. Moreover, the educational level of parents, fixed schedule of school, transportation access, time, material resources, unawareness of parents, unwelcoming school members, etc are some other preventive factors for parental involvement (Roy & Giraldo-García, 2018).

METHOD

This part discusses the current study's overall methodology and data collection techniques. The first part discussed the research design mixed methods and the justification for employing a mixed research methodology. The second part describes the sample size and sample size, data collection instruments, and data analysis procedures. The third part talks about the research ethics of the study.

Research Design

The study employed a mixed-method approach throughout the paper. Using the combination of quantitative and qualitative methods, the researcher enables a comprehensive understanding of parental involvement in preschool education. It also assisted the researcher in explaining and enhancing the quality of the findings found from quantitative and qualitative data (Creswell & Creswell, 2017). Moreover, employing a mixed method design is effective as it gives the flexibility to scrutinize and interpret broader information about parents' ideas,

opinions, experiences, and feelings toward involvement in their child's kindergarten education. For example, the participants who are involved in the survey can provide limited information about their involvement in a child's academic life due to closed questions. Nevertheless, deeper information on parental involvement could be obtained through semi-structured interviews.

Thus, the mixed method approach is meant to answer this research paper's main research question: "In what activities do parents involve in their child's education at kindergarten?" This can be described numerically using a rating scale and qualitatively in text (Creswell et al., 2003; Williams, 2007). To this end, the qualitative data complemented to clarify the quantitative findings collected using questionnaires (Williams, 2007). Finally, the data collected from questionnaires and semi-structured interviews is connected, analyzed, and interpreted.

Sampling Size and Sampling Site

The study's sampling size comprises 30 participants. The participants consisted of parents of students who used bus services and who did not. Fifteen parents were interviewed from those parents who participated in filling out the questionnaire. The research study was conducted at St. Joseph Kindergarten School found in Asmara. This sampling site was selected purposively for the current study due to the researcher's familiarity and its unique characteristics in terms of the large number of students enrolled every year.

Data Collection Instruments

In this study, a questionnaire and semi-structured interview were employed to collect the data for answering the research questions of the thesis. The reliability of 21 parental involvement items was .748 when tested by Cronbach's alpha coefficient. This indicates that the questionnaire is reliable, with consistent responses from the participants. The questionnaire includes twenty-one items of closed-ended questions and students were asked to rate these statements on a point five Likert scale where 1= Strong Disagree (SDA), 2=Disagree (DA), 3= Neutral, 4= Agree (A) and 5= Strong Agree (SA) (Vagias, 2006).

To incorporate the parents' perspective, the researcher employed a stratified random sampling procedure, which includes parents who used their child's bus service and who didn't in collecting the data through the survey. This is because stratified sampling enables the researcher to include the representatives from each sample group in the study (Teddlie & Yu, 2007). Then, questionnaires were distributed to the respondents randomly. The rationale for using random sampling in this study was that random sampling gives the sample population an equal chance of participation (Connaway & Powell, 2010). The questionnaire was classified into three themes.

A semi-structured interview was conducted with parents to obtain detailed information. The interview section contains eight items of semi-structured interview questions. The purposive sampling technique was utilized for semi-structured interviews to collect data from parents (Teddlie & Yu, 2007). This helped the researcher to find in-depth viewpoints about parental involvement from different parents. The interview took thirty to thirty-five minutes for each interviewee. During the interview, the researcher took notes and audio to help refer back and look at the interview data. Finally, after completing the interview, the researcher presented the transcription of the notes and the recorded audio to the participants to check the authenticity of the data (Bryman, 2008).

Data Analysis

The quantitative data collected from different parents and their corresponding analyses give a general picture of the study. The qualitative data collected through interviews and their analysis then illuminated the quantitative results obtained (Ivonkova et al., 2006). Narrative text analysis was used to analyze the data collected through interviews. This method gives meaningful interpretation and discussion (Esin, 2011). Furthermore, the qualitative findings were merged with the findings and discussions of the quantitative data to address the research questions.

RESULTS AND DISCUSSION

Table 1. Descriptive Statistics on Level of Parental Involvement

Level of Parental Involvement	**Percentage (%)**				
	SDA	DA	N	A	SA
Visit the school to check my child's STEAM progress	20	3.3	10	30	26.7
Attend parent-teacher STEAM meeting	13.3	16.7	6.7	26.7	36.6
Volunteers participate in school STEAM activities	26.7	40	13.3	6.7	13.3
Assisting my child in school STEAM activities	0	6.7	6.7	50	36.6
Reviewing children's STEAM learning at home	3.3	3.3	0	43.4	50
Guiding my child in doing STEAM homework	0	6.7	0	33.3	60
Preparing STEAM examples for exercises	3.3	6.7	10	33.3	46.7
Provides a conducive STEAM learning environment at home for studying	0	3.3	13.3	30	53.4
Provide STEAM learning material rewards to motivate the cl	3.3	23.3	16.7	26.7	30

N.B. Scale: Strong Disagree (SDA) =1, Disagree (DA) =2, Neutral (N) =3, Agree (A) =4 & Strong Agree (SA) =5

The findings were presented based on the three themes related to parental perception of STEAM education and their involvement. The researcher developed nine items to measure the extent of the parent's perception of STEAM education and involvement in their child's STEAM education at the kindergarten level of education. Five items were identified to examine how far parents are involved in their child's social or emotional development. In addition, seven items were used to determine the barriers or challenges parents face from involvement in their child's education at the pre-primary educational level. The data collected through semi-structured

interviews was presented in narrative form to enrich the quantitative findings and to have a broader understanding of the research problem.

Descriptive Statistics on Level of Parental STEAM Education Involvement

The table above discusses to what extent parents are involved in their child's STEAM education at kindergarten. Parents are responsible for visiting the school where their child is attending the STEAM classroom. The visit should be aimed at checking their child's STEAM educational progress or social interaction within the school. In line with this, 56.7 % of the respondents replied that they visit the school and contact their child's STEAM teachers to know their child's educational progress. In addition to this, some of the interviewee results revealed that they visit the school and check their child's STEAM educational progress. However, according to most of the interviewee's points of view, parents visit the school to pay the school's monthly fees or bus service charges. This result indicates that there is a limited belief and perception of parents in their child's STEAM education at St. Joseph kindergarten school. On the other hand, 23.3% of the participants failed to check their child's STEAM education by visiting the school. However, the remaining 10% did not respond whether they visited the school or not to inquire about their child's skills on STEAM conditions.

Conducting meetings with the child's parents is a fundamental feature of the school STEAM education. Through the meeting, parents may learn about the school's STEAM background, express their views and problems, know each other with the school community, and bridge the gap between the school's STEAM education and academic achievements. As per the statistical report, 63% of the participants viewed that they attended the school STEAM meeting that takes place among the staff and the parents of the child. Based on the interviewee's point of view, parents attend a STEAM meeting that the school organizes. Nevertheless, 30% of the respondents said they did not participate in school STEAM meetings. This could be due to lack of time. They might not attend the meeting as the parent may have some other social obligations while the remaining are neutral. This means they are not quite sure whether they will attend a STEAM education meeting.

In the above table, most of the participants (67%) did not participate in school STEAM activities voluntarily. Parents can be involved in different home-based activities, including assisting their child in school STEAM activities, reviewing the child's learning at home, guiding them in doing STEAM homework assignments, preparing various STEAM exercises to master learning, providing a conducive STEAM environment for study at home, and provision of motivational rewards for the child. Referring to the above table, more or equal to 80% of the respondents said they are involved in most of these STEAM activities. This revealed

that the level of parental involvement in their child's STEAM education at pre-primary education is remarkable. Likewise, about 57% of parents are involved in providing motivational rewards to their children. Furthermore, the interviewee added that parents prepare STEAM materials to exercise what is expected to be mastered and practiced in STEAM activities. The interviewee also explained that they involve the child in different home-based STEAM activities, including ensuring and providing painting colors, snuffers, canvas, glue, and other relevant STEAM learning materials.

Descriptive Statistics on Child's Social or Emotional Development

Table 2. Descriptive Statistics on Child's Social or Emotional Development

Child's Social or Emotional Development	Percentage (%)				
	SDA	DA	N	A	SA
Builds STEAM centered relationship with my child	0	6.7	6.7	16.6	70
Initiate cooperative STEAM-centered work	0	10	3.3	26.7	60
Telling stories for the child at home with STAEM-centered games	13.3	13.3	10	23.3	40
Allow the child to play with STEAM-centered materials with another child in free time	3.3	20	6.7	30	40
Playing STEAM-centered games together with my child	3.3	26.7	6.7	23.3	40

N.B. Scale: Strong Disagree (SDA) =1, Disagree (DA) =2, Neutral (N) =3, Agree (A) =4 & Strong Agree (SA) =5

A child can develop social or emotional skills by interacting with family members, classmates, and colleagues using STEAM learning materials. Thus, parents are the key players in developing the child's social or emotional skills. This could be possible through parents building good STEAM relationships with the child, initiating cooperative STEAM work, telling stories at home with board games, children playing with colleagues, and singing together with the child. Based on Table 2., the result showed that the child and the parent build a positive STEAM-centered relationship. About 87% of the participants agreed they build good STEAM-centered relationships with their kids at home. At the same time, 6.7% of the parents did not ensure a good STEAM-centered relationship with their child. However, the remaining 6.7% were neutral. This means they are unsure whether they can build good STEAM-centered relationships with their child at home. Parents are also responsible for initiating cooperative work for the child. In this case, 87% of the respondents agreed that they initiate cooperative work for their child. On the other hand, 10% of the participants did not agree about initiating cooperative STEAM-centered work for their child. The others were not quite sure about this statement.

Telling stories for the child by the parent is crucial. It promotes the child's understanding, speaking, and association skills. In line with this, most participants (63.3%) replied that they tell stories with STEAM centered on their children at home. At the same time, about 26% did

not tell STEAM-centered stories to their child at home. The 10% were unsure whether they tell STEAM-centered stories to their kids.

Children love STEAM-centered playing with their colleagues, as they easily understand each other. Most of the parents (70%) allow their children to play with their colleagues on STEAM-centered games or plays. On the other hand, 23.3% replied that they were not allowed to play.

STEAM to center their child with colleagues. In contrast, 6.7% of the parents were not sure about this case. In addition, playing with their child on STEAM-centered games is a fundamental feature promoting social skills. 63.3% of the respondents agreed that they play with their children to facilitate STEAM learning. On the other hand, 30% of the parents did not play with their children at home. The remaining respondents were neutral.

Moreover, the interview results indicated that most parents facilitate STEAM education for their child's social development. Parents buy Art books and tell them to draw from the book and cut paper for different shapes. Their grandparents also tell the child some relevant STEAM-centered stories with sticks or stones, even different soil textures. Children interact with their parents at home by playing STEAM-centered games about what he/she learned in STEAM class at home. For example, most of the respondents said that:

"We play together with my child about what he/she has learned in STEAM class, like cutting papers for English alphabets, building a house using hard papers, and improvising materials."

This way of interaction facilitates the child's creative and problem-solving skills and mastering skills. In addition, most interviewees said that they allow the child to play with his/her colleagues/neighborhoods with STEM-centered plays. The interviewee added that after eating lunch, the child should take a break and then go out to play with his/her neighbors or older brothers and sisters. This promotes the child's social development and STEAM operation skills through interacting with different kinds of children or older brothers and sisters. However, one parent replied:

"If my child is out, he never back home by himself. Therefore, I do not allow my child to play with his colleagues or neighborhoods".

This indicates that some parents are authoritarian in controlling their children in the room. Thus, children may not develop social skills as they lack interaction with peers using STEAM-integrated plays.

Descriptive Statistics on Barriers to Parental perceptions in school STEAM education

Table 3. Descriptive Statistucs on Bariers to Parental Involvement

Barriers to Parental Involvement	Percentage (%)				
	SDA	DA	N	A	SA
Low socioeconomic status affects my STEAM perception	43.3	16.7	6.7	30	3.3
Lack of transportation from home to school hinders me fr participating in the school-arranged STEAM activities	43.3	10	3.3	20	23.4
My child's school STEAM schedule does not match my w schedule	23.3	26.7	0	23.3	26.7
Lack of time to help home-learning STEAM activities	30	26.7	6.7	13.3	23.3
The low level of my education affects my STEAM percepi and involvement	46.6	40	6.7	6.7	0
Limited knowledge of school STEAM background	56.7	36.7	3.3	3.3	0
School members do not promote the STEAM educat system	83.3	13.3	3.3	0	0

N.B. Scale: Strong Disagree (SDA) =1, Disagree (DA) =2, Neutral (N) =3, Agree (A) =4 & Strong Agree (SA) =5

Parents with low socioeconomic status may not be involved in their child's STEAM education. Based on Table 4.3, 33.3% of the respondents agreed that their socioeconomic status affects their involvement in school STEAM activities. In comparison, most of the participants (60%) replied that socioeconomic did not affect their involvement in their child's school STEAM education at pre-primary education. Some parents also fail to be involved in their children's school STEAM activities due to a lack of transportation access from home to school. About 43% of the respondents replied that they were not involved in school STEAM activities due to a lack of transportation access. However, most of the parents (53%) responded that they had no transportation problems with their involvement. Moreover, other barriers to parental involvement in school STEAM activities include a mismatch of parent's work with the school STEAM program and a shortage of time. In line with this, 50% of the parents were not involved in school STEAM activities due to a mismatch of their work with school STEAM programs. In line with this, most of the interviewees replied that they have no serious problem/barrier to being involved in their child's school STEAM activities except for lack of time. This revealed that the parents were willing to be involved in school STEAM activities with their children but failed due to a shortage of time as they had work.

On the other hand, the result indicated that school members welcome parents to be involved in the school STEAM activities. The data also shows that parents have enough STEAM knowledge about the school's STEAM background. Thus, limited STEAM knowledge of school STEAM background did not see parents as barriers to their involvement in school STEAM activities.

This study was designed to explore the level of parental perceptions and beliefs regarding STEAM education for a young child's social development and to discover elements that support a social or emotional child's development abilities with barriers to parental school STEAM

involvement and perception. Parents visiting the school to observe their children's STEAM education and activities, attending school STEAM meetings, voluntarily participating in school STEAM activities, assisting their children's STEAM learning at home, providing a STEAM study room, and providing motivational rewards for their children can all be used to gauge how parents feel about STEAM education. Approximately 57% of parents contacted their children's STEAM teachers by visiting the school, according to the quantitative findings The qualitative outcome, on the other hand, showed that the parents' visit was intended to pay for bus service or monthly school payments. From these results, we can understand that parents visit the school for different purposes, including checking the child's STEAM educational progress and well-being and paying school fees or bus service charges. Paying fees for the child is not enough. Parents should visit and contact their child's STEAM teachers at the school to know the child's overall condition. Furthermore, some parents do not visit the school STEAM environment to check their child's STEAM educational progress. This could be because some parents not having someone to look after their younger kids at home. Similarly, Đurišić and Bunijevac (2017), described that parents are not involved in school STEAM activities due to a lack of taking care of their younger child at home (Hunter-Doniger, 2021).

Another means of parental involvement in school STEAM activity is attending school STEAM meetings. The school and the parent can communicate with each other about the child's STEAM education and overall well-being through meetings. In line with this, 63 % of the participants attend school STEAM-based meetings. This meeting can allow parents to know their child's condition and express their views, ideas, and problems. The school also uses the meeting to share STEAM information, answer parents' STEAM-related questions, and solve problems.

Parental STEAM education involvement does not mean only participating in a school STEAM environment but also being involved in their child's home STEAM-based activities. This research finding shows that the level of parental STEAM perception and involvement is home STEAM-based. This STEAM education embraces assisting the child with school STEAM activities, reviewing the child's learning at home, supporting them in doing STEAM homework, preparing various STEAM exercises for the child at home, conducive STEAM Environment for studying, and providing STEAM material rewards. The above ideas correspond to Orillosa and Magno (2013), who state that parental STEAM-based involvement can be viewed as school-based involvement and home STEAM-based learning. In STEAM-based education, parents can participate voluntarily in school STEAM activities, attend school STEAM meetings, and become a members of parent-teacher associations (PTA). On the other

hand, home STEAM-based learning means parents doing their best to facilitate their child's learning at home like reviewing at home what the child STEAM learned in class, supporting in doing STEAM homework, separate STEAM study room, etc. are to mention among others.

Different factors affect the child's social development. Parents are the foundation for the child's social development. Children spend most of their time interacting with parents, which can foster the child's social skills. The finding indicated that in St. Joseph Kindergarten, parents build good relationships with the child, initiate cooperative STEAM work with the child, tell STEAM-integrated stories, allow STEAM-related play with peers/neighborhoods, and play STEAM-integrated games together with the child. The study found that most parents are doing their best to foster their child's social development using STEAM education. For instance, 87% of the respondents ensured a positive relationship with their kids at home and initiated cooperative STEAM work. This finding correlates with Thomas et al. (2020), in which the parent's STEAM effort is to enhance the child's social skills.

Parental STEAM education perception can be affected by different factors. This means that parents may have negative perceptions of school STEAM activities. According to Magwa and Mugari (2017), some factors are taking care of the younger child, working full-time jobs, and a lack of STEAM education awareness on how to get involved at home. In addition, Jafarov (2015) described that parents with high-income status are more involved in their child's STEAM education, and thus, their child succeeds in school. Similarly, the current study found a mismatch of parents' work with the school STEAM program, the absence of someone to look after his/her younger child, socioeconomic status, and shortage of time.

CONCLUSION

The findings of this study demonstrated the need for more research on early childhood parental views toward STEAM education in Eritrea. We need to reconsider how parents view STEAM education given the wide range of opinions about what and how STEAM practices can be incorporated in early childhood in and out of classroom pedagogy. This is especially true in light of creative parental approaches to STEAM education. Regarding parents' preparation for and belief in STEAM integration in education, this raises a crucial question about the quality of early childhood education programs in Eritrea today. It also highlights the chances for parents' kids to enhance their STEAM abilities in the current schools. Notably, most parents in this survey lacked knowledge and expertise before the STEAM approach became a school focus. Although STEAM is a relatively new concept in Eritrea's early childhood education system, it has just begun to acquire appeal among educators as well. A fresh perspective on early childhood education is becoming more prevalent among Eritrean parents due to the

expanding national focus on innovative teaching methods, such as the learning-centered interactive pedagogy statement and STEAM principles.

Additionally, the study's inconclusive conclusions provide an intriguing glimpse into early childhood parents' perceptions of STEAM education. Based on this small sample, the findings indicate that parents recognize the benefits of the STEAM approach. However, their opinions on its goals, methods, and necessary resources differ greatly. More research is required in these areas to maximize the potential of what seems to be a good strategy. New educational techniques are required, especially for the youngest students, given the expanding national focus on economic competitiveness and the evolving needs of the future workforce. Since early childhood parents will be the main adopters and implementers of shifting educational paradigms, their perspectives on the new ideas are a priceless source of information for directing educational innovations like STEAM education and how they are used in early life at home and school. Furthermore, no significant issues or restrictions prohibit parents from including STEAM education in their child's education at St. Joseph Kindergarten School. However, some obstacles are the parents' socioeconomic status, lack of time, and the inability to find someone to watch the younger child.

Finally, the study recommends that the role of parents in STEAM education should be escalated as it plays an immense role in shaping the overall aspects of the child’s life. The child’s creative and critical thinking skills and social interaction skills, are shaped at the lower level of education. Thus, at the kindergarten STEAM level, parents’ positive attitude to words STEAM education with their involvement and the school should work together to improve the child’s future life. The current study found that most of the parents were positive about in-home STEAM-based activities. This shows that parents support their children’s STEAM skills at home.

On the other hand, this indicates a limited link between the school’s STEAM teaching and the child's parent, as the parents visit the school to pay school fees. In this case, the strong bond between these two agents of the child should be maintained in kindergarten STEAM education. Moreover, the data collected from one kindergarten may not represent the views of the overall STEAM-Practicing kindergarten in the country. Therefore, further research should be needed to examine the views of many participants from different perspectives.

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