

# Funding Modalities of ICTs Requirements for Early Childhood Development Classes: A Zimbabwean Experience

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## ABSTRACT

It is Government policy that schools in Zimbabwe, embrace Information and Communication Technologies (ICTs) in line with the country's Vision 2030 and global technological inclination. Several studies found that financial impediments undermined use of ICTs as media of instruction. Drawing from the Technology Acceptance Model (TAM) the present researchers sought to find out how ICTs facilitate teaching and learning for Early Childhood Development (ECD) classes, were funded. The study was conducted in Harare at different types of primary schools that included: government, council, mission and trust. The researchers employed a mixed method approach which adopted both qualitative and quantitative research strategies, processes and procedures. Quantitative data collection through individual face-to-face interviews with school heads preceded data from focus group discussions with ECD teachers and TICs which provided rich narratives to affirm and expand on school heads' responses. Concurrently, school documents were reviewed. Data were analysed using descriptive and inferential statistical methods and subsequently triangulated to enhance the credibility of the findings. This study exposed limitations in funding of ICT resources for ECD learners at government, council and mission (GCM) schools whilst trust schools were a model in this regard. However, the Ministry of Primary and Secondary Education (MoPSE) has continued to encourage schools to equip themselves with appropriate ICTs according to their means and capacities. This has created a digital divide among schools as well as contradiction with government policy of promoting equity in ICT access and use. A government dedicated ICT budget as well as inter- and multi-sectoral support systems were therefore critical to realise the ECD level ICT requirements. This would go a long way to bridge the digital divide among different types of schools and lay a strong foundation of practical application of ICTs in daily life and future education.

**Key concepts:** media of instruction, early childhood development, ICT tools

## INTRODUCTION

Globally, countries now regard understanding ICT literacy and application skills as part of the core of education, along reading, writing and numeracy (Srivastava, 2016). As such, schools have prioritised using a diverse set of ICT tools as media of instruction (Wangezi, 2022). As a developing nation, Zimbabwe is part of this new dispensation which entails using Information and Communication Technologies (ICTs) as a medium of instruction (using ICTs in teaching and learning of different subjects). However, Tandika and Ndijuye (2019) note that most primary schools find it hard to use ICTs for teaching-learning at Early Childhood Development (ECD) level because they are not adequately equipped with relevant resources. This study focused on how ICT resources (tools) were funded to facilitate teaching and learning in ECD (pre-primary) classes at different types of schools in the Harare Urban Setting.

It is Government policy that schools in Zimbabwe, across the curricula embrace ICTs in line with the global technological inclination (Curriculum Framework for Primary and Secondary Education, 2015-2022). Ratheeswari (2018) views ICTs as a mechanism, at school level that could provide a way to re-think and redesign the teaching and learning process, thus leading to quality education. ICT tools for early childhood development (ECD) in Zimbabwe are critical for improving education and learning outcomes. In view of this, the country has made significant strides in integrating ICTs in to the education system right from ECD level. However, several researchers note that use of ICTs as media of instruction involve substantial funding (Hennessy et al, 2010; Montoya, 2023, Musiyandaka et al, 2013, Tandika and Ndijuye, 2019). With regard to

the implementation of ICTs for instructional purposes in Zimbabwe, Fletcher (2021) suggests potential sources of finance and material resources for ICT-oriented classroom instruction. These financial sources include grants from government, and support systems such as public-private partnerships. However, due to contextual differences, the sources of funds for primary schools may not be similar.

In Zimbabwe, all systems in education are making strides to develop and sustain ICT provisions towards realisation of Vision 2030 whose thrust is to make Zimbabwe a middle-class economy. A study by Tandika and Ndjuyeye (2019) found that funding is difficult to manage in developing countries where many people are living below the poverty datum line. Similarly, Hennessy et al., (2010) revealed that, of the greatest challenges in funding ICT resources for classroom instruction is balancing such educational requirements with economic realities. Zimbabwe is a country that has been experiencing economic restraints for a significant period. There are also different types of primary schools in Zimbabwe, located in different socio-economic contexts. With regard to the prevailing economic meltdown and contextual differences among different types of schools that include: government, council, mission and trust schools; this study aims to establish how provisions to facilitate use of ICT as media of instruction at ECD level, are funded.

This study there sought to answer the following questions:

1. What is the main source of funds for ECD learners' ICT provisions for instructional purposes?
2. To what extent does the ICT budget meet the ECD learners' ICT provisions for classroom instruction?
3. What mechanisms can be put in place to enhance ECD learners' ICT provisions for classroom instruction?

According to a study by Khan, Hasan and Clement (2012), funding is difficult to manage in developing countries where many people are living below the poverty datum line. ICT-supported software, hardware, internet, audio-visual aids, and other accessories demand huge funds. This concurs with the World Bank (2020) who found that the cost of internet, computers and maintenance of telecommunication could not be afforded by the majority of public schools and this inhibits use of ICTs as media of instruction. In the same vein, Wangeci (2022) concluded that use of ICTs depends on the availability of software and hardware and access to resources by both teachers and learners. These costs are, in most cases, inflated and cannot be provided by most developing countries (UNESCO, 2023; Mooketsi, 2020).

Hennessy et al. (2010) revealed that, of the greatest challenges in ICT resources for classroom instruction is balancing educational goals with economic realities. In the same vein, Musiyandaka, Ranga and Kiwa (2013) found that issues of affordability inhibit use of ICT as a medium of instruction in rural Mashonaland West province of Zimbabwe. Low affordability of ICT by rural schools, considering the prohibitive costs of purchase and maintenance of ICT equipment limit pupils' access to ICT tools in ECD classrooms. However, Harare is basically an urban community but with different types of schools (government, council, mission, trust) whose revenue base is different. It is important to find out how these types of primary schools fund and sustain ICT provisions for ECD-level classroom instruction.

## Theoretical Framework

This study adopted the Technology Acceptance Model (TAM) to understand funding modalities for ICT resources in ECD classes. TAM emphasises two primary factors that influence technology acceptance: Perceived Usefulness and Perceived Ease of Use (Olushola and Abiola, 2017). In the context of funding modalities for ICTs in ECD classes, TAM can help identify several key areas namely;

*Performance Expectancy:* This aspect reflects the extent to which teachers believe that using ICTs will enhance their teaching effectiveness and improve learner performances. Funding should prioritise technologies that have demonstrated effectiveness in improving educational performance, ensuring that investments lead to tangible improvements in learning outcomes for early childhood learning.

*Effort Expectancy:* This refers to the perceived ease when using the technology (Olushola and Abiola, 2017). If the ICT tools are user-friendly and can be easily integrated into existing teaching practices, teachers are more likely to adopt them. Funding should therefore support training programs and resources that simplify the use of ICTs, making them more accessible to educators.

*Social Influence:* According to Abdullah, Ward and Ahmed (2016) this comprises the impact of peers, colleagues, and the broader educational community on the adoption of ICTs. Funding can be directed towards capacity building of educators to create professional learning communities and networks that encourage best practices among educators, fostering a supportive environment for technology adoption.

*Facilitating Conditions:* These are the organisational and technical infrastructures that support the use of ICTs (Gil-Flores, Rodríguez-Santero and Torres-Gordillo, 2017). Adequate funding should ensure that schools address any infrastructural gaps and acquire necessary hardware, software, and technical support to effectively implement ICTs in ECD settings.

If these and other factors are considered, funding modalities can be designed to maximise the acceptance and effective use of ICTs in early childhood development classes, ultimately improving the learning experience for early childhood learners.

### Research design and methods

By adopting TAM as a theoretical framework in this study, we were able to establish funding modalities of Information and Communication Technologies requirements for Early Childhood Development Classes in Zimbabwe. Thus, this theoretical framework helped in addressing the main research questions. This study was conducted at sixty-three (63) primary schools in Harare Metropolitan Province whose categories were varied, these include: government, council, mission and trust. Heads and teachers in charge (TICs) from these participating schools automatically took part in this study. The researchers employed a mixed methods approach which adopted both qualitative and quantitative research strategies, processes and procedures. Quantitative data collection through individual face-to-face interviews from school heads preceded data from ECD teachers and TICs which provided rich narratives to affirm and expand on school heads' responses. The population from which the research sample was drawn comprised two hundred and twenty-five (225) school heads, two hundred and twenty-five (225) TICs and two hundred and ten (210) ECD teachers. The research followed purposeful sampling to conduct focus group discussions with one hundred and twenty-six (126) ECD teachers and sixty-three (63) TICs. Concurrently, school documents were reviewed. All interviews were recorded and data were subsequently transcribed, analysed using descriptive and inferential statistical methods and triangulated to enhance the credibility of the findings. Table 1 presents demographic data of the participants.

Table 1. Demographic data of participants

Position			Gender			Age		
	Number	%		Number	%		Number	%
School head	63	25	Male	57	22.62	20 – 29	80	31.75
			Female	195	77.38	30 – 39	24	9.52
TIC	63	25				40 – 49	86	34.13
ECD Educator	126	50				50 – 59	62	24.6

Among the two hundred and fifty-two (252) participants who took part in the study were; sixty three (63) school heads, sixty three (63) teachers-in charge and one hundred and twenty-six (126) ECD educators from selected primary schools in Harare Metropolitan Province. These were purposively sampled because the researchers believed that, the individuals were proficient and well-informed with the phenomenon of interest and in order to achieve a manageable amount of data (Creswell & Poth, 2016). Over all, these participants worked with children in ECD classes who were entitled to interact with ICTs.

## RESULTS

### Source of funding for ECD ICT provisions

This research solicited information on funding of ICT provisions for ECD classes. Information was sought





One trend that emerged from the teachers’ responses [Figure 1] was that there was no budget allocation for ECD classes’ ICT requirements at some GCM schools. However, there were some school heads that channelled part of the school levies towards the ECD classes’ ICT requirements. Another trend noted from the teachers’ views was lack of maintenance budget at GCM schools. Details from the majority of teachers’ responses revealed that the cost of maintenance of ICT resources was high. Thus, when computers, programmable toys or televisions broke down, repairs were done only when petty cash was available. In the event of non-availability of petty cash, maintenance of ICT tools was problematic.

It also emerged that there were no government grants disbursed to primary schools towards ICT provisions. Closely related to lack of government grants, was that there was over reliance on parents at GCM schools, which resulted in the parents being over-burdened by school requirements. Information from teachers indicated that the Ministry’s policy (Director’s Circular Minute Number 48 of 2007 & Principal’s Director Circular Minute Number 41 of 2010) directed that ECD was a community-based programme. This meant that ECD educational requirements, including ICTs, were the responsibility of parents. Some teachers at GCM schools also remarked that some parents were not employed but were expected to provide for their children’s tuition fees, levies, uniforms, exercise books, health needs and nutrition. Such parents were overwhelmed and could not cope with school demands. Contrary to the situation at GCM schools, trust school teachers reported that they had sponsors for their ICT requirements and their school levies were relatively high such that technical problems with ICTs were fixed as soon as they were identified. Further confirmation and elaboration of information in Table 2 and Figure 2 was obtained from focus group interviews with ECD Teachers-in-charge (TICs) [Table 3].

Table 3: ECD TICs interview responses on source of funding for ICT resources

Type of school	TICs responses during Focus Group Interviews (FGIs)
Council	We cannot pursue further training on ICT pedagogy because we cannot afford the tuition fees. My school cannot even procure appropriate ICTs specifically for ECD classes nor maintain the 20 adult-size computers in the school laboratory.
Government	It is not possible for us to enrol for training in ICT pedagogy because the fees for such programmes are very high. Our school has inadequate classrooms, ICT tools and furniture because the cash in-flows are limited. It would be unreasonable for us to look forward to funding of our training in ICT pedagogy from the school.
Mission	We are prepared to go for training in ICT pedagogy in turns but our school cannot afford even one toy-laptop. The ICT tools and internet facility we have were donated. Funds to maintain or upgrade the available ICTs and procure new ECD ICTs are hard to come by.
	Our school has an isolated experience of one teacher who transferred to a trust school after having been sponsored in further studies by the school priests (Responsible Authority). We approached the School Head as ECD teachers to request the Responsible Authority to assist us with tuition fees to enrol for studies in ICT pedagogy. Our school Head turned down the request citing that the priests were uncertain that they would retain teachers after funding their training in ICT pedagogy.
Trust	We are adequately sponsored on our ICT infrastructure and tools. Security of the ICTs is well catered for. Only one ECD teacher at our school paid for her tuition fees for training in ICT pedagogy. She was not patient to wait for her turn. The other teachers including me were patient and we received sponsorship from the school authorities. We are all trained now.

The observed trend was that most GCM schools were financially constrained such that they could not afford their schools’ ICT requirements that included upgrading of ICT infrastructure, procurement of appropriate ICT resources for ECD classes and funding maintenance of ICT resources. It was also reported that the finances available could not allow the school heads to invest in training teachers on the use of ICTs as media of

instruction. In addition, some ECD teachers at mission schools disclosed that their Responsible Authorities were uncertain that they would retain teachers after funding their training in ICT pedagogy. They had had the experience of some teachers transferring to trust schools after receiving specialised training, which meant a waste of the already scarce financial resources at the mission schools.

### Adequacy of ICT financial support

Schools can effectively use ICT as media of instruction if they have adequate funds for operational costs. The researcher sought evidence on the extent to which the school budget met the ECD learners’ ICT provisions for classroom instruction. Evidence was sought from the school heads, ECD teachers, TICs and school documents. School heads’ responses are contained in Table 4.

Table 4: School heads responses on adequacy of financial support

Type of schools	Financial support for ICT requirements			
	Not Adequate		Adequate	
	N	%	N	%
Government	26	88	4	12
Council	20	91	2	9
Mission	4	80	1	20
Trust	-	-	6	100

Table 4 indicates that 4 (12%) heads at government schools, 2 (9%) at council, 1 (20%) at mission and 6 (100%) at trust schools reported that funding for ICTs was adequate. This data reveals that the majority of GCM schools lacked funding whilst trust schools had adequate funding for ICTs for teaching and learning. Adequate funding of ICTs at trust schools was confirmed through face-to-face interviews with teachers.

Table 5: Responses of ECD teachers on adequacy of funding

Type of schools	Responses from individual face-to-face interviews with teachers
Trust	I am fortunate that my school provided me with funds for attendance at ICT international conferences and staff development. This has kept me in touch with best practices in use of ICTs for instructional purposes. I have also been funded to visit other trust schools in Zimbabwe. This has afforded me opportunities to share experiences and also keep me abreast with evolving dynamics on ICTs as media of instruction.
Government	Funding for ICTs is purely by parents. Our parents are mainly middle class and others are living below the poverty datum line. So the majority of our parents cannot even pay the school levies, from which we fund the ICTs.
	I have taught at various government schools. I have had experience of some school heads who think that ECD pupils are too young to use computers, so the ECD learners are limited to computerised toys and television. At this school, computerised toys are provided for by the individual pupils’ parents as a requirement at enrolment level. The SDA has provided funds for the 2 televisions we have. You can see that funding is limited.
Council	We are financially challenged in every respect. We rely on parents. Most of our parents owe the school. They have agreed to a payment plan which has not been honoured by some of the parents. We also have parents who are not employed at all. These ones cannot pay the levies.

Similar sentiments with those of ECD teachers from GCM schools were obtained from focus group interviews with teachers-in-charge (TICs) [Table 6].

Table 6: Responses of TICs on adequacy of funding

Type of schools	Responses from FGIs with teachers-in-charge (TICs)
Council	Funding of ICT needs for our classes is and will never be adequate until we have our own budget allocation. Our school has always failed to raise funds to maintain and upgrade the few ICTs in the school. To save on maintenance costs, our head has generated policies restricting the use of computers by ECD classes, because in his view, ECD pupils destroy ICT tools.
	We cannot talk of adequacy of funding for ICT needs for ECD classes. There is no ICT budget at all. ECD classes are the school ICT garbage sites. Some ICT tools that are broken down or out-dated are allocated by the school head to ECD classes to be used as toys by the learners.
Government	When it comes to making decisions and budgeting for procurement of ICT equipment, wiring and networking, most school heads in our cluster concentrate on the junior grades. They are of the view that ECD learners are too young to use ICTs in teaching and learning. As a result, even when our ECD teachers are competent in using ICTs for classroom instruction, they may not have the ICTs due to school level decisions that do not adequately believe in allocation of funds for ICTs for ECD learners.
Mission	Funding for our pupils' ICT needs is far from enough; even the Basic Education Assistance Module does not cover the ECD learners. The orphans and other vulnerable ECD pupils are assisted by the Carpenum Trust which is funded by ECONET. This trust fund targets learners with an excellent performance record. The application is on-line and tedious.
Trust	We are soundly funded by foreign sponsors, development partners, local sponsors and board of trustees. More so, use of ICTs in teaching and learning is part and parcel of our mission statement and this is a source of attraction to parents. The elite parents, from whom we get most of our learners, go out of their way to ensure that their children are taught using ICTs. Our networking on ICT pedagogy is funded by our foreign sponsors. Likewise, we have an ICT budget which is not the sole responsibility of parents.

Overall, the above information from interviews with ECD teachers and TICs indicated that funding for ICT requirements was not adequate at the majority of GCM schools. The situation was different at trust schools whereby financial support was adequate. This information was confirmed with school documents (mission statements, ledger books, staff meeting minutes and school heads' reports). Inadequate financial support at most GCM schools was a setback to use ICT as media of instruction whereas the opposite applied for trust schools.

It emerged that the government was not pro-active in terms of funding of ICT resources across all types of schools. The general trend from participants depicted trust schools as models in terms of adequate funding of ICTs. Cross-sectorial assistance was evident at trust schools. The trust schools' foreign sponsors, development partners, local sponsors and board of trustees and individual well-wishers were consistent in funding ICT provisions for ECD learners. More so, the use of ICTs as media of instruction, was part of the schools' mission statement and parents' attraction to trust schools. As a result, parents, who were at mostly the elite class, did whatever possible to ensure that their children were taught using ICTs. Technical problems with ICT tools were fixed as soon as they were identified. Trust schools therefore, managed to have an ICT budget allocation for ECD classes which was not the sole responsibility of parents. By virtue of adequate funding, some trust schools went an extra mile to fund collaboration of their ECD teachers with other trust school teachers in the country and beyond, so as to enhance use of ICT in teaching and learning.

Contrary to the situation at trust schools, the general observation at GCM schools was the limited funding for ECD classes' ICT requirements. Procurement of new ICTs to replace the absolute ones was out of reach. In the event of non-availability of petty cash in the SDA coffers, upgrading and/or maintenance of ICT infrastructure and tools was problematic. To save on maintenance costs, some school heads generated policies restricting the use of school computers by ECD classes, which further inhibited learners from hands-on experiences with the computers. ECD learners were viewed as culprits to the destruction of ICT tools, so they were limited to hands-on experiences with television, programmable toys, obsolete and broken down ICT tools. In cases where ECD learners accessed ICT resources, the ICTs were mostly adult-sized.

One more trend that emerged from teachers' responses was over reliance on parents, which resulted in the parents being over-burdened by school requirements at GCM schools. It was noted that government policy required parents to provide for ECD classes' ICTs requirements but some parents were unemployed. Such parents found school demands overwhelming. Furthermore, teachers expressed that government programmes such as Basic Education Assistance Module (BEAM) did not cater for the ECD level classes. The underprivileged ECD learners, particularly orphans, were assisted by the Carpenum Trust (scholarship), a brain child of ECONET (a national communication and technologies service provider).

However, it was noted from school documents that the ECONET scholarship only covered successful applicants who were outstanding academic performers. This meant that the parent and/or guardians of less competent or orphaned learners were overwhelmed with the school ICT requirements over and above other learner's needs such as tuition, uniforms, stationery, health and nutrition. Thus, there was high potential of lack of use of ICTs as instructional tools at GCM schools.

### Income generation strategies for ECD learners' ICT provisions

The researchers further investigated how schools supplemented funding of their ICT requirements. The majority of government school heads 28 (93.3%), council school heads 17 (77.2%), mission school heads 5 (83.3%) indicated that schools supplemented their funds through fund raising. In the case of trust schools, 6 (100%) school heads indicated that they supplemented their funds through fundraising activities. It was noted that fund-raising was the strategy used by GCMT schools to generate income to supplement their main ICT fund revenue. Similar information was obtained from focus group discussions with ECD teachers [Figure 2].

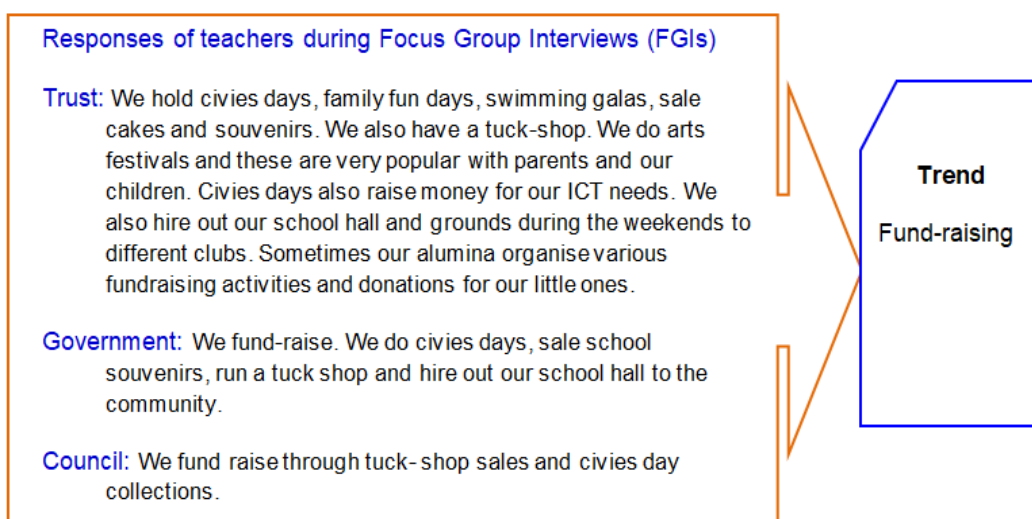


Figure 2: Responses of teachers on school income generating strategies

Figure 2 shows that GCMT schools fund-raSised to augment their ICT regular income flows. The common fund-raising strategies at GCM were civic days and tuck-shop sales. However, trust schools engaged in several income generation activities than GCM schools. These fund-raising strategies included civies days, family fun days, swimming galas, arts festivals, cake sales, souvenir sales, tuck-shop sales, alumina and hiring out the school halls during the weekend to clubs. This information was confirmed by school documents such as ledger books, school fund raising committee records and the school head's reports.



On the whole, it was established that GCM schools lacked supplementary funding strategies and this limited their ICT revenue base. Contrary to the situation at GCM schools, trust schools had several income generation activities and this significantly reinforced their standing ICT budget. As a result, use of ICT as media of instruction was more prominent at trust schools than GCM schools.

Funding is a pre-requisite to start off and sustain any educational programme, and teaching and learning using ICTs is no exception. This meant capacitating teachers, providing ICT infrastructure, providing ICT equipment and engaging in income generation activities, required capital. The researchers, thus, explored the views of the school heads, ECD teachers and TICs on the way forward with regard funding of ICT provisions for teaching and learning purposes. Figure 3 contains information obtained from school heads.

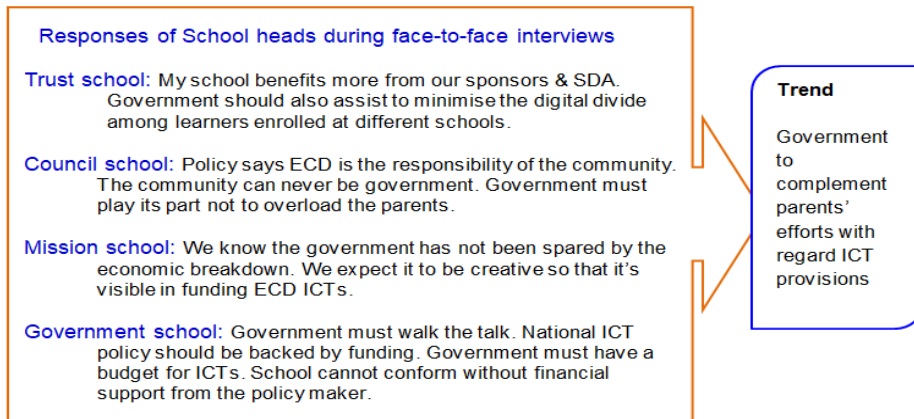


Figure 3: Views of school heads on way forward on ICT funding

According to Figure 3, details from all school heads' responses indicated that government should be pro-active in funding ICT provisions and not to leave the burden to parents. School heads from GCM schools remarked that parents lacked capacity to sustain funding of ICTs. Financing of ICTs should start with the government then emulated by the schools. School heads further suggested that government should not expect schools to implement what had not been provided for; that is, implementing the ICT policy without the material and financial resources. The predominant trend that emerged from the school heads, who are the main custodians of the school finances, was that the government should complement parents' efforts with regard to funding of ICT requirements for ECD classes.

Similar sentiments were obtained from TICs during focus group interviews [Figure 4].

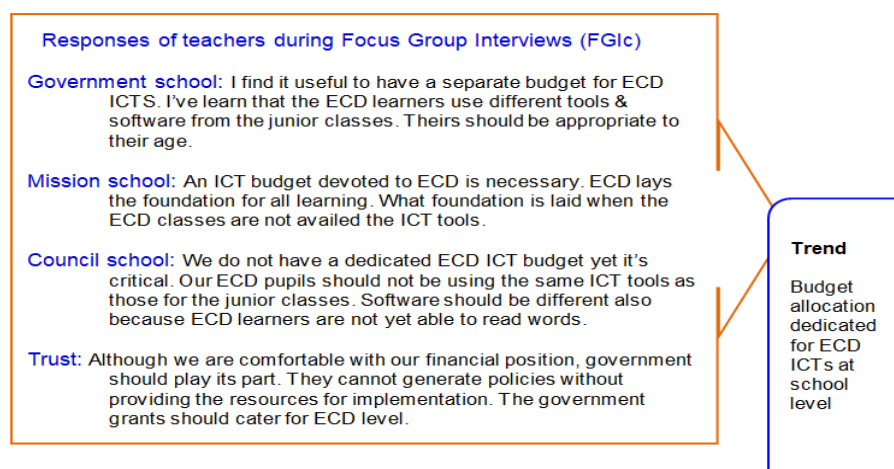


Figure 4: Views of ECD teachers on way forward on ICT funding

Lack of developmentally appropriate ICTs for the ECD learners created a learning gap at this foundation stage which could undermine the learner's intellectual potential up the education ladder. The overarching trend drawn from the ECD teacher responses [Figure 4] was that there should be a budget allocation dedicated for

ECD ICTs at school level. The proposed ICT school-level budget would facilitate provision of ICT resources for use as media of instruction at GCM schools.

Table 7: Recommendations by ECD teachers on ICT funding

Type of school	Responses of teachers during face-to-face interviews
Council	We always say “it takes a village to raise a child” but as far as ICT provisions are concerned, only “one member of the village” is taking responsibility. To be frank, other players such as NGOs, industry, business people and government are docile. All ECD stakeholders must be pro-active in funding ICTs if ICTs are to be effectively used in teaching and learning at public schools.
Government	We are dependent on parents for our ICT needs. We understand that the country’s economy is not forth-coming but it does not mean that we off-load our responsibilities to others. The government has failed us, parents are also limited, but where is industry and the business community? Where is their social responsibility? They should be assisting schools, even in a small way. It makes a difference. Non-governmental organisations are visible on feeding programmes. I thought ICT is currently the in-thing but NGOs have decided to take a passive role.

This information was an indication that collective effort was required with regard to funding of ICTs. Use of ICTs in teaching and learning at ECD level would be inevitable if a collaborative strategy to fund ICT provisions was adopted.

## FINDINGS

The discussion on findings covered sources of funding, adequacy of funding and strategies to enhance ECD ICT provisions for classroom instruction.

### Source of funding

It was established that the main source of funding for ECD learners’ ICT requirements was the parents through the School Development Association (SDA). This was consistent with the Principal Director’s Circular 48 of 2007 that directed that the construction and furnishing of ECD classes was the SDA’s responsibility. The SDA is a committee that represents parents in the management of the school. If the SDA is parent driven, a comparison can be drawn between the income of parents of learners at GCM schools and those at trust schools. The SDA at trust schools tended to be more financially resourced than the SDA at the majority of GCM schools. This was because learners at trust schools paid more tuition fees and levies than those at GCM schools. Trust schools also had several sponsors that augmented revenue from tuition fees and levies. Thus, in terms of financial resources, trust schools had an edge over the other types of schools. This was because the Principal Director’s Circular 41 of 2010 gave parents the leverage to decide on the levies to be paid by the learners. In line with Musiyandaka, Ranga and Kiwa (2013), the use of ICT as a medium of instruction was affected by the school contexts with regard to financial support.

### Adequacy of funding

This study found that there was no budget purely for ICT provisions from the government, despite the government having rolled out a policy and produced a curriculum requiring teachers to use ICTs in teaching and learning at ECD level (Curriculum Framework for Primary and Secondary Education, 2015-2022). Other stakeholders such as industry, NGOs and other government development partners were not visible with regard to funding of ICT resources. This confirmed Khan, Hasan and Clement (2012) and Wangeci (2022) who concur that public (in this case government and council schools) had inadequate funding. Such findings were in line with a study conducted in Botswana on the implementation of ICTs for instructional purposes (Mooketsi, 2020), which established that specific sources of finance were critical to facilitate use of ICTs in

teaching and learning. Financial sources included grants from government, private donations, fund-raising events and revenue earned from ancillary services such as internet connectivity, word processing and printing. This implied the need for a sustainable dedicated ICT budget. Similarly; UNESCO (2023) asserts that without various sources of funds, it is not possible for schools to finance procurement, maintenance and upgrading of ICT resources.

This study also established that there was over-reliance on parents for ICT requirements for ECD classes at most GCM schools, which undermined use of ICT as a medium of instruction. The school heads relied on funding from parents who were already overwhelmed by other commitments such as tuition fees, uniforms, sport regalia, exercise books, and construction of classrooms. Trust schools had several sponsors (Board of Trustees, SDA and individual affluent parents) such that technical problems with ICTs were fixed as soon as they were identified. They could also swiftly replace obsolete ICT resources with new ones, which was not possible at GCM schools. The importance of collective effort in financing ICT provisions could never be over-emphasised as echoed by a study by Microsoft (2006) cited in Hennessy et al. (2010) whose findings showed that no single stakeholder, not even government had adequate resources to plan, implement and control successful, scalable and sustainable ICT resources across schools. The study revealed that partnerships were critical and the key to success was an inclusive partnership that pulled together the visions, resources and experiences of both public and private sectors.

This study further unveiled that, whenever funds permitted for addressing the ICT requirements at GCM schools, priority was given to the junior grades. This meant when it came to making decisions for the procurement of, wiring and networking, upgrading and maintenance of ICT resources, school heads concentrated on junior grades. To save on maintenance costs, some heads went as far as crafting policies that limited ECD learners from accessing ICT provisions. Some school heads even viewed ECD learners as culprits who destroyed ICT resources. During interviews, one focus group said:

*We cannot talk of adequacy of funding for ICT needs for ECD classes. There is no ICT budget at all. The ECD classes are the school' ICT garbage sites. Some ICT tools that are broken down or out-dated are allocated by the school head to ECD classes to be used during teaching and learning. Our school head has on several occasions remarked that ECD learners should not use functional ICTs as they are disposed to break them down.*

Other school heads were of the perception that ECD learners were too young to use computers. This is contrary to the Zimbabwe Vision 2030 specifications, that regards Early Childhood Development as “a decisive area, where the foundation of the basic principles and philosophies of Zimbabwe’s education system should be laid. It also emerged that computers donated to ECD classes at some GCM schools were out-dated and when they broke down, there were no funds allocated for their repair and maintenance. This contradicts with 2015-2022 Zimbabwe National Curriculum Framework which aims to ensure provision of ICTs necessary for learning and development of children. Lack of prioritisation of ECD learners on funding of ICT resources limited the learners’ access to ICTs which, in turn, inhibited use of ICT as a medium of instruction at ECD level.

The general trend from participants depicted trust schools as models in terms of adequate funding of ICTs which created an enabling environment for use of ICTs in learning and instruction. Cross-sectorial assistance which comprised the SDA, school’s responsible authority, individual well-wishers, development partners and sponsors, was more evident at trust schools than GCM schools. The trust schools’ foreign sponsors, development partners, local sponsors and board of trustees were consistent in funding ICTs. This was consistent with a study by Hennessey et al. (2010), who established that participation from multiple players that include Ministry of Education, software developers, and government development partners, was ideal in order to achieve the effective use of ICTs as media of instruction. Shabani (2016) refers to such multiple players as public-private partnerships.

More so, use of ICTs as media of instruction was part of the schools’ mission statement and parents’ attraction to trust schools. As a result, parents, most of all affluent, did whatever possible to ensure that their children were taught using ICTs. By virtue of adequate funding, some trust schools went an extra mile to fund

collaboration of their ECD teachers with other trust school teachers in the country and beyond, so as to compare notes on the use of ICTs in teaching and learning. While the very few trust schools continued to advance the ICT technology; government, council and mission schools resorted to traditional media for teaching and learning as they lacked the financial muscle to provide ICTs for the ECD classes. This created a digital divide among GCM and trust schools; contrary to the Zimbabwe Education Act (2020).

The economic meltdown experienced by Zimbabwe as a nation may have contributed to the government, council and mission schools' constrained financial situation. More so, increasingly large classes worsened the financial situation at GCM as Zimbabwe made an effort to pace up with global ICT inclinations (Srivastava, 2016 and Wangeci, 2022). It also emerged that nationwide induction workshops for teachers on the 2015 MoPSE updated curriculum also compounded the government's financial challenges. Consequently, lack of government funding, the country's constrained economic situation, large enrolments in ECD classes at GCM schools, nationwide induction workshops on MoPSE updated curriculum, coupled with the introduction of ICT as a standalone subject at ECD level, consumed a large chunk of the national primary education budget. This has stifled the creation of an enabling environment for effective use of ICTs in teaching and learning.

### **Strategies to enhance ECD ICT provisions for classroom instruction**

It was established that fundraising was the dominant income generation strategy to supplement the ICT standing revenue flows at government, council, mission and trust schools. The fund raising activities involved holding civics days, school souvenir sales, and arts festivals. Civic days involved learners dressing in the way they desired with the exception of the school uniform, but for a flat fee. School souvenir sales involved selling branded materials such as T-shirts, table cloths, tea mugs, beer mugs, key holders and nail cutters. Arts festivals were cultural activities showcased by school children while the school collected revenue from the spectators. Fund raising activities such as cake sales, family fun days and swimming galas were peculiar to trust schools. Family fun days involved requesting a flat fee from spectators whereby ECD learners showcased their different talents; the school fund raising committee sold food items on the day, and families paid to participate in recreational activities such as jumping castle, horse riding and a music show from a local band. Swimming galas involved swimming competitions among pupils from different 'school houses' and different classes of the same grade.

On the whole, it was established that GCM schools lacked supplementary funding strategies and this limited their ICT revenue base. Contrary to the situation at GCM schools, trust schools had several income generation activities which significantly reinforced their standing ICT budget. Some of the income generation activities at trust schools were civics days, family fun days, cake and souvenir sales, swimming galas, tuck-shop and hiring out of the school hall. Adequate funding of ICT requirements for ECD classes as noted at trust schools portrays the power of affluent schools as submitted by Mangwaya, Blignaut, and Pillay (2016). As a result, the use of ICTs in teaching and learning was more prominent at trust schools than GCM schools.

## **CONCLUSION**

On the whole, the absence of an ICT budget allocation for ECD classes, lack of an ICT maintenance budget and over-reliance on ECD parents for ICT requirements at most GCM schools undermined use of ICTs as media of instruction. Sound sponsorship and high tuition fees at trust schools created an enabling environment for utilisation of ICTs for instructional purposes. Overall, investing in ICT resources for ECD learners in Zimbabwe has the potential to expand learning outcomes, increase access to quality education and prepare young children for success in the digital era.

## **RECOMMENDATIONS**

In order to bridge the digital divide among different types of schools and to lay a strong foundation of practical application of ICTs in daily life and future education, it is therefore recommended that:

- The government of Zimbabwe through the Ministry of Primary and Secondary Education (MoPSE) must design and implement a dedicated ICT budget



- There should be an inter and multi-sectoral support system to provide different primary schools with ICT requirements, to afford ECD learners equitable opportunities to learn and apply 21st century skills.
- Overall, the Government of Zimbabwe must take advantage of the existing opportunities for partnerships with private sector and international organisations to support ICT infrastructure development for ECD learners.

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