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Developing effective study sheets as a vehicle for learning in museums

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ABSTRACT

The study sheets are a popular medium of content delivery in museums. This study examines how study sheets being employed by national museums in Zimbabwe, promote effective learning of curriculum content among primary school pupils. The study employed the socio-cultural learning framework as the theoretical framework. Qualitative research and phenomenology research design were deployed as research methodology. The study was undertaken from 2015-2019. Data was solicited from 230 primary school pupils from Grades 3-7, 12 school teachers, two museum directors, two museum curators and seven tour guides. The study reveals that study sheets that are in multiple choice format have been found to promote lower order thinking and guess responses while study sheets that involved drawing, open ended questions, and employing indigenous languages promoted higher order thinking, synthesis and critical thinking. It is concluded that museum study sheets in Zimbabwe mainly promote general and museum-based knowledges as compared to curriculum-based knowledges. This study established pillars needed to be considered when developing effective study sheets that facilitate learning of curriculum content. This study contributes to the promotion of effective heritage education programming in museums.

KEYWORDS:

study sheets, effective learning, knowledge, lower and higher order thinking.

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1. Introduction

Museums provide unique learning environments that enable individuals and school pupils to view, touch, and learn from real objects and access information in a free choice environment (Milovanov et al., 2017; Talboys, 2011). National museums in Zimbabwe use study sheets as one of their vehicles to promote learning among school pupils but very little has been researched and published to establish if this vehicle promotes effective learning among pupils.

Study sheets have been defined as guiding questions, instructions, information or presented problems that are structured or semi-structured which can be found in form of a questionnaire format (Farida et al., 2019). Study sheets are pre-designed by museums for school students to answer soon after a tour. Museums in Africa, especially those in Zimbabwe, utilise study sheets as a method of content delivery. Study sheets are a very old method of content delivery so much that scholars usually ignore studying the utility of study sheets in facilitating learning. However, the fact that national museums in Zimbabwe use study sheets in their service delivery, especially when dealing with school pupils, there is need for research to assess their effectiveness in this regard. This paper assesses how primary school pupils are learning curriculum content through museum study sheets, in doing so establishing the barriers learners face.

2. Literature review

Research about study sheets, museums and student learning have been conducted by Dick (2014), Nyamupangedengu and Lelliot (2012), Nyamupangedengu (2009), Durbin (1999) and with the oldest from Pollock (1983). Pollock (1983) conducted a study at the Natural History Museum in London with primary school pupils, and gathered that study sheets made pupils focus on particular elements of an exhibit. Pollock (1983) provides that study sheets are useful as they make students learn and focus on certain displays unlike having school pupils viewing everything at a museum or cultural site. Pollock (1983) established that when school pupils are focused on a specific display, they are bound to acquire in-depth information about the artefacts on display. However, the study by Pollock (1983) did not establish how pupils learn the curriculum content through study sheets at the museum or indicate the barriers that pupils experience when using study sheets and this is the gap which this study fills.

Nyamupangedengu and Lelliot (2012) investigated the extent to which study sheets promoted learning among eight primary school pupils at the Oppenheimer Life Sciences Museum. The study gathered that school teachers who explained to pupils what was expected of them before answering the study sheets assisted to focus pupils on specific aspects of the museum experience (Nyamupangedengu & Lelliott, 2012). School pupils who did not get teacher assistance before answering the study sheets thought that study sheets were a secondary activity to do after viewing the exhibition whilst other pupils just completed in silence. It was also gathered that effective study sheets facilitate social interaction among students (Nyamupangedengu & Lelliott, 2012).

What can be learnt from the study by Nyamupangedengu and Lelliot (2012) is that pupils who receive guidance on how they would use study sheets learn effectively as compared to those pupils who are simply left to decide what to do with study sheets. This study is informed by Nyamupangedengu and Lelliot (2012) that teacher guidance is one of the important factors that can influence pupil's learning through study sheets. Nyamupangedengu (2009) indicates that there are ten items which museums can use to assess the suitability and applicability of study sheets in enhancing learning among school students. These items are: task density, orientation cues, information source, level of choice, cognitive level, response format, question format, classroom connection, social interaction and site specificity.

Task density refers to the amount of work learners are supposed to complete and if a study sheet has many questions, it discourages pupils to learn from exhibits of their choice (Farida et al., 2019; Nyamupangedengu, 2009). Well-developed study sheets should have orientation cues that aim to provide pupils with a map orientation of the museum site. Effective learning occurs when the study sheet focus students more on the object more than the text on museum labels. The level of choice refers to the number of answers available on a task and good study sheets should allow pupils to respond through different ways that are not limited to drawing, diagrams, pictures and filing information. Study sheets that promote higher order thinking require students to observe, examine exhibits and write their conceptualisation reports of exhibits.

Study sheets that use multiple choice questions have been found to promote lower order thinking whilst open-ended questions allow pupils to provide multiple solutions or perspectives to things, and promote complex thinking. Effective study sheets are those that are designed by museums in collaboration

with teachers and linking with the classroom or curriculum. Nyamupangedengu (2009) also indicate that museums are social learning settings. Hence, study sheets that promote learning should allow pupils to socialise, and learn from each other as well as through discussion.

Study sheets that seek to promote learning should balance low and high site specificity. Site specificity refers to the extent to which pupil tasks in a study sheet are based on a specific exhibit. High site specificity serves to focus pupils while low site specificity gives room to pupils to look at a wide range of exhibits in the museum.

Dick (2014) sought to establish whether or not study sheets with high density questions promoted curriculum related conversations among pupils at the Johannesburg Zoo. High task density means that pupils are expected to answer many questions in a short space of time, and it was gathered that pupils complained that study sheets limited pupils to exhibits of their choice. It was further revealed that some pupils experienced fatigue because the study sheet was very long and there were no orientation cues. As such, pupils spent a lot of time trying to locate the relevant displays (Dick, 2014). It was also gathered that the study sheets at the Zoo did not promote observation of exhibits and therefore pupils spent much of the time searching text for information sources (Dick, 2014).

Three things can be drawn from Dick's (2014) study. The first thing is that study sheets-controlled pupil's movements as they made pupils to concentrate on them. Secondly, study sheets that had too many questions requiring pupils to answer them in a short period of time contributed to fatigue among pupils. Thirdly, study sheets that did not show the galleries where answers were to be found affected pupil's learning. This study benefits from Dick (2014) who provides information about some of the barriers associated with poorly developed study sheets.

Durbin (1999) posits that museums should consider five factors when designing effective study sheets. These include questioning techniques, practicality, variety, developing a sense of the whole and curriculum context (Durbin, 1999). According to Durbin (1999) the questioning technique on study sheets should promote critical and higher order thinking. Hence, it is encouraged to employ open-ended questions and use of diagrams. The questioning technique should vary to cater for the different student's learning styles. The practicality dimension is concerned with the usability of the study

sheet. The study sheet should be designed in such a way that school pupils are spread around galleries to avoid frustration from other pupils not being able to view exhibits and their captions (Durbin, 1999). The practicality dimension also takes into consideration children's ergonomics. For example, school pupils should be able to reach and access displays and information. Study sheets that promote the learning of curriculum content should take into consideration the national curriculum which students are learning and this enables them to easily relate with what they are learning in the classroom (Durbin, 1999).

3. Methodology

This study employed the socio-cultural framework of learning as theoretical framework. This framework has its roots in the work of Vygotsky (1978) who popularised that learning in informal settings such as museums is mediated by culture and social interaction. The learner has agency and is responsible for constructing meaning of the content they are exposed to. Vygotsky (1978) popularised the concept of the Zone of Proximal Development where social interaction occurs between a learner and a more knowledgeable individual assisting in the learning process. The Contextual Model of Learning indicates that learning from museums is influenced by the personal, physical and socio-cultural contexts (Falk & Dierking, 2000). Bangura (2005) through the Ubuntugogy framework supposes that learning from museums is also influenced by social interaction, empiricism and as earlier suggested by Vygotsky, through the Zone of Proximal Development (ZPD). Learning in informal settings occurs effectively when the content is accessible, takes into consideration the learning styles of learners, when the learner is an active agent in the learning process and when educational content is found in multi-modal formats (Chitima, 2020). Learning in museums is both a process and a product (Hooper-Greenhill, 2007, 2003; Kelly, 2007; Falk and Dierking, 2000). As a process learning in museums is active engagement with experience and is actively constructed through social mediation with others (Falk and Dierking, 2000). As a product learning in the museum results in the realisation or display of soft and hard outcomes such as knowledge gain and understanding, skills, change in attitudes and values, enjoyment, inspiration and creativity (RCMG, 2003).

This study employed qualitative and phenomenology research approaches. Phenomenology research is most suitable when dealing with research participants that experience the same lived world and with generally the same traits or characteristics (Roberts, 2013). The study was conducted from 2015-2019

and for easy manageability this study selected the Zimbabwe Military Museum (ZMM) in Gweru and the National Museum of Transport and Antiquities (NMTA) in Mutare as case studies. Purposive sampling was used where data was solicited from 230 primary school pupils from Grades 3-7, where 134 were accessed at the ZMM and 96 at the NMTA. These students were accessed at the two museum stations. The study also involved 12 school teachers, two museum directors, two museum curators and seven tour guides as research participants.

The study employed several research instruments that included assessing the accessibility of study sheets, and their link to the national curriculum in Zimbabwe. Interviews, observations and listening to pupil's conversations in galleries were also deployed as research instruments in soliciting data. The ZMM provides study sheets through its structured class visits whilst the NMTA provides study sheets through the school-museum visits. Authorisation to involve school pupils in this research was sought from the Ministry of Primary and Secondary Education (MoPSE) provincial education officers, school heads and teachers. Permission to research at the two museums was sought from regional museum directors. Participation from individual museum personnel was on a voluntary basis.

4. Results

Scope of learning

School pupils that visit the ZMM and NMTA learn selected curriculum content related to social studies and environmental studies. Through exit interviews, school pupils at the ZMM indicated that they learnt selected topics found in the social studies curriculum and these included the history of Zimbabwe, the Zimbabwe Republic Police (ZRP), the Air Force or the Zimbabwe National Army (ZNA). Students interviewed at the NMTA indicated that they learnt selected topics found in the social and environmental studies curriculum that included pre-colonial farming techniques, clothes, guns and transport.

The study gathered that study sheets at both the ZMM and NMTA mainly promote the learning of general and museum-based knowledges as compared to curriculum content. An analysis of study sheets at the ZMM show that they are more questions that promote the learning of general knowledge more than curriculum related questions and this is shown below (Table 1).

Table 1: Study sheets at the ZMM

Grade level study sheet	Total number of questions	Curriculum related questions	museum based knowledge questions	General knowledge questions
Grade 3	16	6	7	3
Grade 4	24	11	3	10
Grade 5	32	9	3	20
Grade 6	40	13	4	20
Grade 7	40	17	4	19

Out of 16 questions, the Grade 3 pupils could only relate to six of the questions to the school curriculum. The Grade 5 and 6 study sheets have more general questions more than curriculum related questions. The study sheets at these levels provide little information that is related to the school curriculum as compared to general knowledge or content examined at school. Study sheets at the NMTA also contain a good number of curriculum related questions from all grade levels and half of the questions at all levels promote general based knowledge acquisition (see Table 2).

Table 2: Study Sheets at the NMTA

Name of Gallery	Total number of questions	Curriculum related questions	museum based knowledge questions	General knowledge questions
Transport	14	8		6
Mezzanine	6	4		2
Eastern Districts	8	3		6

Factors influencing pupil's learning through study sheets

a) Structure of the educational programme

On arrival at the ZMM, pupils are randomly grouped into four and given a grade level-based study sheet. Unlike at the ZMM, upon arrival at the NMTA school pupils are given gallery-based study sheets. Study sheets demanded that school pupils work together and this facilitated social interaction, collaboration and team work among pupils. The nature of collaboration included pupils assigning each other tasks to do.

The study also observed that pupils learnt communication skills, team work and sharing ideas with their group members as shown on Figures 1 and 2. These conditions made pupils to be actively involved in the learning process. A group of Grade 5 pupils were observed at the ZMM, and overhead conversing over how the exhibitions in one of the gallery linked with their school work. Social interaction within group members also assisted pupils to learn especially those that were not given pre-orientation at school.

Figure 1: Grade 7 pupils answering study sheet in the Military History gallery, ZMM.

Figure 2: Grade 6 pupils answering study sheet at the Aviation gallery, ZMM

b) Control and focus of school pupils

Study sheets assisted to control school pupils in museums. For example, the ZMM receives at least 50-300 school pupils each day of the working week through its structured class visits (SCV), and as such this pupil ratio did not match the staff compliment at the museum. Therefore, the few tour guides manage pupils by assigning them study sheets to answer as a way to control them. Study sheets at both museums served to focus and control delinquent school pupils. Four Grade 5 pupils were observed wrestling, tagging and running uncontrollably in galleries but after being assigned study sheets they seized the rowdy behaviour and concentrated on the work given.

c) Content and questioning style

Study sheets at the ZMM and NMTA provide school pupils with different or assorted type of knowledge that included museum-based knowledge, general knowledge and curriculum related knowledge. Study sheets deployed at the NMTA are written in Shona and English languages, with accompanying visuals; this was cited by pupils as facilitating learning of exhibition content. For

example, a study sheet for the transport gallery at the NMTA requests pupils to study diagrams that have missing information. Pupils are then required to fill in the missing information. This type of questioning gives opportunity to pupils to study artefacts in detail in-order to find the missing information on the diagrams hence learning more.

d) Tour guide or teacher assistance

School pupils that got assistance by tour guides and teachers displayed strong indicators of learning. Such indicators included knowledge gain and understanding, change in attitudes and values as well as enjoyment. It was also observed that school teachers or tour guides (Figures 3 and 4) that accompanied pupils in galleries and helped interpret questions assisted to link museum displays with the curriculum.

Figure 3: Tour guide assisting pupils at the NMTA

Figure 4: Tour guide demonstrating to pupils in the Aviation gallery, ZMM

Barriers to Learning through Study Sheets

a) Language and use of jargon

There are a number of challenges presented by study sheets that affected pupil's learning. Study sheets at the ZMM, and some study sheets at the NMTA are in English and use specialised jargon as well as scientific language. The majority of permanent exhibitions at the NMTA and ZMM make use of scientific language, and this is a barrier to school pupil's learning. A label at the ZMM (Figure 5) is a good example of use of jargon which pupils find challenging to comprehend. School pupils indicated that they preferred study sheets that were designed in indigenous languages because these were their first language.

The study gathered that study sheets that incorporated Shona language as those found at the NMTA were cited as providing opportunities for pupils to learn effectively without requiring other people to interpret questions on their behalf. Figure 5 displays the scientific language and jargon used on labels at the ZMM.

ANTI-AIRCRAFT HEAVY MACHINE GUN
THIS WEAPON IS A 14.4MM KPV ANTI-AIRCRAFT HEAVY MACHINE GUN ISSUED TO THE SOVIET ARMY IN THE 1960S. IT WAS DESIGNED BY VLADIMIROV TO USE HIGH VELOCITY ROUND USED FOR PTRD-41 DEGATYAREV ANTI-ARMOUR WEAPON. IT IS A RECOIL OPERATED WEAPON WITH A QUICK CHARGE BARREL AND IS MOUNTED ON A ZPU 1 TWO WHEELED ANTI-AIRCRAFT MOUNTING. THIS WEAPON COULD BE USED AS AN INFANTRY SUPPORTING WEAPON FIRING ARMOUR-PIERCING INCENTIARY AND TRACER TYPES OF BULLETS.

Figure 5: A label at the ZMM displaying use of jargon

b) Congestion

Museums in Zimbabwe receive most pupils at the end of second and third terms causing congestion of hall ways, galleries and attractive display cases. The Ministry of Primary and Secondary Education usually approves field excursions at the end of school terms hence many schools visit heritage institutions at the generally the same time. Another intellectual barrier associated with study sheets at the ZMM is that the answers were found on few specific artefacts causing school pupils to congest around such artefacts. For example, at the ZMM, a group of 15 Grade 6 pupils (Figure 6) were observed overcrowded at a Quad tractor where pupils desired to read for themselves the caption accompanying the artefact from which they could get answers for their tasks.

Figure 6: Grade 6 pupils with study sheets overcrowded on a caption, ZMM.

c) Multiple choice questions

Another challenge with the study sheets at the ZMM was that they are in multiple choice format. Multiple choice questioning as utilised by study sheets at the ZMM promoted guess work and copying. Study sheets at the ZMM provide answers which pupils are required to choose from and this limited synthesis and critical thinking. Unlike the questioning style as found on the ZMM study sheets, study sheets at the NMTA provided opportunities for school pupils to write their responses and draw missing information as provided on diagrams. This enabled analyses, synthesis and critical thinking.

Random selection of students

The study observed that the random selection of students into groups at the ZMM had some challenges. It was also established that the pupil who holds the study sheet end up doing the majority of the work. This was caused by the fact that school pupils in the case of the ZMM are randomly selected and grouped, therefore, they abandon their groups and follow those with their best friends or form new ones based on their preferences. There is some psychological feeling that the pupil holding the study sheet was responsible for making sure that the study sheet was attended to as compared to their group members who were free to wander about in other galleries and did not feel the urgency or responsibility to fill the study sheet.

d) Cabinets of curiosity

National museums in Zimbabwe are a colonial inheritance containing colonial permanent exhibitions. In actual fact, museums hold cabinets of curiosity whose displays are constituted by haphazard and mixed artefacts with little documentation. In most cases, the majority of the permanent displays simply show the name of the item being displayed and this is barrier to learning as pupils request more information about the displayed artefacts.

Another challenge regards mixed collections within the displays causing visual discord and information overload. The major barrier observed is that study sheets rely more on the labels accompanying displays and yet in some instances some of the displays do not have write ups. Some exhibits such as the Staghound, 6 pounder, Morris Quad tractor and some artillery guns in station 8 at the ZMM do not have write ups or the right information on them yet there are questions about them on study sheets. Therefore, ZMM education department gives pupils free marks on those five questions because they know there are no

answers on the artefacts. When there are no guided tours to further explain these exhibits, it becomes very challenging to pupils to understand the objects. The same challenge is also found at the NMTA particularly in the Eastern Districts gallery where exhibitions do not have adequate documentation and utilise too small font size on labels hindering learning.

e) Freedom in the learning process

Through exit interviews conducted with school pupils, it was gathered that generally study sheets in museums were viewed by school pupils as providing little freedom as they consumed much of the time answering them. For example, 79 pupils at the ZMM and 53 at the NMTA indicated that the study sheets did not provide them with choice and freedom. These school pupils further indicated that study sheets were restrictive as they spent time attempting to answer them. Pupils were given limited time to view displays of their choices after answering study sheets.

5. Discussion

Effective study sheets that promote effective learning of school curriculum content should be grounded on five utility pillars. These pillars include: curriculum context, questioning style, semi-structure, accessibility and social interaction.

Pillar 1-Curriculum context

Study sheets that seek to promote the learning of curriculum content among school pupils in museums should take into consideration the national curriculum. As revealed under the results section national museums studied facilitate the learning of general and museum-based knowledge as compared to the number of questions that relate to the national curriculum. This study closely relates to findings gathered by Nyamupangedengu (2009), Nyamupangedengu and Lelliott (2012), and Durbin (1999) who confirm that school students learn curriculum content from the museum if study sheets relate well with the national curriculum and classroom work.

There are also benefits to involving school teachers when designing study sheets for school pupils or students (Durbin, 1999). Durbin strongly feels that study sheets should be designed in collaboration with school teachers so that they become relevant as they know the requirements of the curriculum. Thus, the current content as found on study sheets promotes knowledge which is not very useful to students to be curriculum competent.

In Zimbabwe, there is room for school teachers to collaborate with museum experts on education issues which may result in the development of educational activities and study sheets that facilitate effective learning of curriculum content. Museums are now required more than ever to be visitor-centred and hence should respond to the needs of their customers. School pupils constitute the biggest populace that visit museums in Zimbabwe and when they visit, they expect, as part of their educational needs, to learn curriculum content. Failure to access educational content or deploy methods of content delivery that leads to the access of curriculum content only promote leisure excursions among school pupils. The socio-cultural framework argues that effective learning occurs when the learner is able to access relevant material which they seek to satisfy their educational needs (Bangura, 2005; Falk & Dierking, 2000; Vygotsky, 1978).

Pillar 2- Questioning style

The study established that study sheets found at the ZMM are in multiple choice format whilst those at the NMTA include open ended questions, drawing and filling missing information. Thus, it is difficult to assess the extent of the effort school pupils expend on study sheets when they are in multiple choice format. Multiple choice study sheets promote rote learning as well as lower order thinking. Study sheets should be designed in such a manner that they promote higher level thinking (Durbin, 1999; Farida et al., 2019). According to Durbin (1999) multiple choice study sheets promote simple recall and low-order thinking. All questions found on study sheets at the ZMM promote simple recall and lower order learning. In order to know which questions promotes higher or lower order learning this study has taken precepts of questions found on study sheets at the ZMM. The following examples of questions are from the Grade 7 study sheet at the ZMM:

1. *What document enabled the BSAC Company settlers to grab land from the local Africans during the occupation of 1890? A. Ngungunyane Concession, B. Rudd Concession C. White paper*
1. *Where did the Imbovane Regiment Regiment of Lobengula's Army wipe out the Allan Wilson Patrol in 1983? A. Pupu, B. Mbembesi, C. Lalapanzi*
1. *Which year was Lobengula crowned King of the Ndebele? A. 1837, B. 1870, C.1893*

Questions that seek to promote higher order thinking would be given as below:

1. *What was contained in the Rudd Concession which was used by the BSAC to occupy Zimbabwe?*
2. *How would you have felt as a soldier if you were part of the Imbovane Regiment of that fought Allan Wilson's Patrol in 1983?*
3. *How would you have run the country if you were in Lobengula's shoes?*

With the first batch of questions, school pupils do not necessarily have to think more besides just ticking any answer as provided on the study sheet. The second batch of questions require students to critically think, and help tap into school pupil's personal reflections, perceptions of the world and how they would act in different situations. Study sheets found at the NMTA at-least requires school pupils to analyse, synthesise information and critically think because they involve open ended questions, demand pupils to investigate missing information and draw. Therefore, such type of study sheets promotes enhanced skills of investigative or detective work, analyses, synthesis and critical thinking.

Open ended questions permit pupils to speak freely and to share more than just facts (Farida et al., 2019). Open ended questions allow pupils to provide multiple solutions or perspectives to things and promote complex thinking. Closed ended questions have the advantage that they can be answered quickly hence allowing pupils to look at exhibits of their choices. According to Durbin (1999) an effective study sheet would require both low-and-higher-level thinking. Study sheet questions should not require only yes or no answer or simple tick suggested answers typical of study sheets at the ZMM.

The questioning technique should also make students spread out in the galleries as compared to having an answer found on few exhibits making school pupils to crowd at exhibits. As found at the ZMM, where pupils crowded on few exhibits because they had answers to the questions found on the study sheets, a more effective way would be to have study sheets with different questions whose answers may be found on different displays to avoid overcrowding and congestion. This gives pupils more space and quality time to interrogate exhibits. According to the socio-culturalists effective learning occurs when learners are given tasks that match their age and challenge students to develop solutions to problems. If tasks and questions are poorly formulated little learning occurs (Bangura, 2005; Chitima, 2020).

Pillar 3-Accessibility

Accessibility is another pillar that is closely related to the questioning style which has the capacity to promote of hinder learning. It is also important for museum educational officers or curators to consider the intellectual accessibility of the study sheet by paying attention to the vocabulary, depth and breadth of language used to match the level of school pupil's cognitive capacities. Study sheets that take into consideration issues pertaining to intellectual access and pupil's physical, cognitive and communication capacities also promote learning. Museum education programming in Zimbabwe is chiefly grounded on inherited permanent exhibitions that make use of jargon and scientific language making it difficult for primary school pupils to comprehend. Zimbabwean museum's permanent exhibitions are typical 18th century cabinets of curiosity that contain mixed and haphazardly exhibited material as well as lacking adequate documentation which is a barrier to effective learning among students. To a large extent, museum permanent exhibitions, narratives and interpretations speak to the colonial period. Study sheets are grounded on these colonial permanent exhibitions, hence, the content that students learn is largely colonial, general and museum-based knowledges. It is these exhibitions that are the major vehicle grounding museum educational programming.

There is need for museums to employ socio-cultural learning frameworks, redesign exhibitions, decolonise narratives and re-interpretation of captions and extended texts in museums so that they communicate to the current educational needs of society (Chitima, 2020; Falk & Dierking, 2000). School pupils learn effectively when study sheets employ indigenous languages because that is the language, they are proficient in. Shona which was used on the NMTA study sheets promoted easy comprehension of tasks at hand. School pupils learn effectively through their first languages (Bangura, 2005) and it is prudent to offer study sheets through multi-languages.

Use of jargon and scientific language on labels and study sheets is a barrier to learning and hence simple and understandable as well as age specific communication is effective in facilitating learning among school pupils. In order to promote intellectual accessibility of museum content through study sheets should be designed by taking into consideration the physical, communicative, emotional and cognitive capacities of learners (Bangura, 2005; Chitima, 2020).

Pillar 4- Semi-structure

Pupils find study sheets as restrictive and controlling in the learning process. Students learn effectively when the learning process provides room where students can view exhibitions of their choice at their own time because learning in museums is life-long and occurs at different times (Falk & Dierking, 2000). Study sheets dictate where and what students should look at hence students feel restricted to view exhibits of their interests. Nyamupangedengu (2009) indicate that questions on study sheets that have a heavy task density force pupils on specific displays hence they fail to get time to view other exhibits thus, questions should have a moderate task density. School pupils should be able to answer study sheets and engage in other educational activities and this promotes variation in the things done and avoids monotony. Most school pupils are repeat visitors and as such doing the same thing over and over again leads to boredom and contribute to pupils getting demotivated to learn.

Pillar 5-Social interaction

The socio-cultural framework indicates that pupils are a community of learners and as such they learn effectively from each other because learning in museums is a social construct (Vygotsky, 1978; Falk & Dierking, 2000). Students learn effectively when study sheets as a method of content delivery facilitate social interaction and discussion. Study sheets at the ZMM and NMTA facilitated social interaction among school pupils and this enabled for them to learn from one another and improved social, communication skills and empathy towards each other (Nyamupangedengu, 2009). A study sheet that promotes social interaction leads to intellectual, social and communication skills outcomes among pupils. Pupils should be able to discuss and share findings and experiences.

6. Conclusion

Primary school pupils in Zimbabwe are expected to learn Mathematics, Languages, Social Studies, Environmental Studies, Agriculture, Information and Communications Technology, Mass Display, Visual and Performing Arts as part of the national curriculum. At grade 7 level, pupils write examinations on these subjects which are marked by the Zimbabwe Schools Examinations Council (ZIMSEC). ZIMSEC being an education standards boards are oriented towards the achievement of hard outcomes such as knowledge gain and understanding and skills acquisition.

It is concluded that museums in Zimbabwe particularly the ZMM and NMTA chiefly promote the learning of general and museum-based knowledges and unfortunately these are not examined by the ZIMSEC. There are few opportunities for primary school students to learn curriculum content through study sheets. It is revealed that study sheets as found at the ZMM promote rote learning, guess work and copying due to the fact that there are in multiple choice format.

Study sheets that employ open-ended questioning, drawing, diagrams and utilising indigenous languages encourage effective higher order learning and synthesis. There are five pillars that require to be considered when developing effective study sheets that facilitate the learning of curriculum content and these are: curriculum context, questioning style, accessibility, social interaction and semi-structure.

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