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Abagusii traditional environmental knowledge and HIV/AIDS management: Implications for English language teaching

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Abstract

Multidisciplinary and multisectoral interventions are necessary for the management of chronic conditions such as HIV/AIDS. One such intervention is the promotion of socially responsible teaching. Anchored within an eclectic theoretical framework involving traditional environmental knowledge, the Sapir-Whorf Hypothesis, and Vygotsky's theory of thought, language and culture, this paper analyses the link between Abagusii traditional environmental knowledge and management of HIV/AIDS. Seven groups of people living with HIV/AIDS were engaged in focus group discussions on the management of HIV/AIDS treatment adherence through sustainable production and use of natural products. The paper reveals that the Abagusii have rich ecological knowledge on the production and use of natural products, which could improve treatment outcomes of people living with HIV/AIDS. This ecological knowledge can be harnessed, documented and ploughed into ELT materials for English Language Teaching. A three-tier ELT framework comprising classroom activities, integrated tasks and practical actions could be adopted for teaching

integrated English in interesting ways while at the same time restoring the environment, food sufficiency and health.

Keywords: ethnomedicine, ecology, materials design, ELT, adherence

1. Introduction

Response on HIV/AIDS since the first case was diagnosed in Kenya in 1984 demonstrates that the complexity of the disease requires multidisciplinary and multisectoral interventions. HIV prevalence reached the peak of 10.5% among adults in 1995/1996, declining to 6.7% in 2003/2004 and 4.7% in 2018/2019 (National AIDS Control Council, 2018). A three-tier approach involving biomedical, structural and behavioural interventions was recommended for adoption in the Kenya AIDS Strategic Framework (2014/2015-2018/2019). However, most implementing partners have channelled their resources and activities into biomedical interventions such as testing and treating People Living with HIV (PLHIV). Yet, in some cases, treatment outcomes have not been good due to nutritional deficiencies and poor adherence to treatment.

To ensure adherence to treatment is achieved and maintained, NASCOP (2008) developed a nutritional and HIV/AIDS strategy. The strategy had a further aim of mainstreaming nutritional interventions in HIV/AIDS policies and programmes and addressing key nutritional concerns. The policy also recommends the development and production of educational materials and job aids on nutrition and HIV/AIDS for improved training of PLHIV on comprehensive care, infant feeding, and maternal nutrition. In spite of these policy recommendations, food supplements from the Ministry of Health and some implementing partners have not met the nutritional needs of PLHIV.

One of the sources of sustainable food for PLHIV is the cultivation of traditional food crops and herbal plants, some of which are known for immunity boosting and medicinal use. Luckily, Kenya has a legal framework to support the practice of people's culture. Article 44 Clause 1 of the Kenya Constitution (2010) states that every person has the right to use the language and to participate in the cultural life of the person's choice. Accordingly, National Goal of Education No. 6 seeks the promotion of, respect for, and development of Kenya's rich and varied cultures. The goal envisions an education that instils in the learner an appreciation of Kenya's rich and diverse cultural heritage, where the learner values their own and respects other people's culture. One of the aspects of the culture of the Abagusii people of South Western Kenya is rich Traditional Environmental Knowledge (TEK) that, in the traditional society, maintained a balanced ecosystem and traditional food sufficiency.

Currently, global environmental sustainability is threatened by such concerns as global warming, ozone depletion, prolonged droughts and pollution due to human activity. The effects have been dire and devastating. Indigenous plants known for use as food and/or medicine are disappearing at a fast rate. Kisii County Government (2018-2022) highlights

the human activities that have contributed to environmental degradation, including cultivation on fragile areas such as steep slopes, wetlands and riparian reserves; quarrying activities for hardcore and ballast; and planting of eucalyptus trees along all the rivers in the county. The consequences have included soil erosion, declining water tables, drying of springs and rivers, and steady disappearance of traditional food crops and herbal plants.

It is no wonder then that environmental concerns have aroused a spate of interest among researchers. For instance, Gürsoy (2010) and Karn (2007) have studied how environmental education can be integrated into foreign language learning, while Adero (2010) has focused on environmental sustainability and policy implications of urban building and construction in Kenya. Environmental activists are also developing counter efforts to protect the ecosystem. As unsustainable human activities continue to destroy the vital life-support functions that a healthy environment offers humanity and all forms of life (Adero, 2010), a lobby group dubbed “The Greenbelt Movement” has been quite vocal in tree planting campaigns and engaging major stakeholders in environmental policy formulation in Kenya.

Global Issues in Language Education (GILE) are now setting the stage for socially responsible teaching (SRT) (Peaty, 2004, p. 15). Socially responsible teaching will prepare students to face global issues, such as environmental conservation, through classroom interactions and out of class activities (Arikan, 2009). There is, therefore, an urgent need for language educators to develop environmental content that advances language and social skills. According to Gürsoy and Sağlam (2011), teachers can influence learners to raise their awareness on environmental issues, develop positive attitudes towards the environment and show them how to become environmentally responsible citizens. This would also imply that the teachers can integrate environmental education into their language lessons. What these teachers might require is the methodology for putting integration into effect.

The Kenya Institute of Curriculum Development (KICD) is tasked with the development and dissemination of curriculum and curriculum support materials such as course books, handbooks, manuals, TV and Radio programmes. Most materials currently used to teach English in primary and secondary schools are organised into themes such as health, environment, technology and climate change. In spite of the spate of research and other forms of response to HIV/AIDS in the last two decades, there is little evidence of work relating HIV/AIDS treatment adherence, TEK and English language teaching (ELT). A healthy environment is a source of herbal remedies and traditional foods, including fruits and vegetables, which manifest as potential alternative medicine in Kenya. Appropriate mechanisms are lacking for the transmission of TEK from the knowledgeable to the less knowledgeable, while modern people appear to be drifting away from traditional foods and herbal remedies to what modernity can offer.

Currently, trends in ELT are focusing on the changing roles and increasing responsibilities of teachers, including using a collaborative, content-based, project-based curriculum to help students develop higher-order thinking skills (Sun, 2014). Yet in Kenya, ELT materials include hardly any content on TEK and how it can be put into cultivation

and processing of natural products known for medicinal and immunity-boosting properties needed by people, including those living with HIV/AIDS. Based on an eclectic theoretical framework comprising TEK theory (Johnson, 1992), the Sapir-Whorf Hypothesis (1912), and Vygotsky's (1983) theory of thought, language and culture, this paper advances a case for investigation, documentation and transmission of TEK through ELT in order to cultivate environmental sustainability skills among learners. In competency-based learning environments, the paper proposes a three-tier ELT framework comprising classroom activities, integrated tasks and practical actions.

2. Theoretical framework

The work reported in this paper is a fusion of language, thought and health management from a cultural perspective. In order to contextualise this study and come up with a framework for the analysis and discussion of data, three theories were employed as discussed in the following subsections.

2.1. Traditional environmental knowledge theory

Espoused by Johnson (1992), TEK generally refers to the knowledge that indigenous peoples have of the natural environment around them as a result of intimate and sustained contact with the land. It is a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment (Berkes, 1993). The knowledge is known by other different terminologies, including “folk ecology”, “ethnoecology”, “indigenous knowledge”, and “knowledge of the land”. Johnson (1992) outlines the following components of TEK: it is recorded and transmitted through oral tradition and is learned through observation and hands-on experience. The knowledge is based on the understanding that the elements of matter (earth, air, fire, and water), which are classified as inanimate, have a life force. All parts of the natural world — plant, animal and the inanimate element — are therefore infused with spirit.

Further, TEK does not view human life as superior to other animate and inanimate elements: all life forms have kinship and are interdependent. All elements of matter are viewed as interconnected and cannot be understood in isolation. Next, TEK is based on diachronic data (long time series of data from one locality). Finally, it is rooted in a social context that sees the world in terms of social and spiritual relations between all life forms. According to Casimirri (2003), Western scientists barely recognise TEK because they assume much of its validity has been lost owing to Western assimilation of indigenous peoples and their knowledge systems. National and county governments in Kenya have not integrated TEK in their environmental management policies. This is the case in Kisii County, where groups of PLHIV have demonstrated that TEK should no longer be ignored as a mechanism for ensuring food sustainability. The need to integrate TEK with

modern environmental management systems for a rich ecology is fundamental. Materials design and preparation should particularly embrace TEK as part of the content for the teaching of the English language in Kenya.

2.2. The Sapir-Whorf hypothesis

According to Sapir (1912), there is a strong tendency to ascribe many elements of human culture to the influence of the environment in which the sharers of that culture are placed. He adds that the characteristic physical environment of a people is to a large extent reflected in language. This thought is reflected in the Sapir-Whorf hypothesis, which holds that our thoughts are shaped by our native language, and therefore speakers of different languages think differently (Cibelli et al., 2016). The hypothesis has strong and weak versions. The strong version holds that we view the world in terms of the categories and distinctions encoded in our language. It also suggests that the linguistic system provided by one language is unique to that language and incommensurable with those of other languages. This view is also called “linguistic determinism”. This principle supports the view that the traditional ecological knowledge of one cultural group is different from that of other groups, and therefore, each speech community views the world differently in terms of the language it uses.

The weak version indicates that the language that one speaks influences, but does not entirely determine his thought. Thus, the language used by a cultural group may influence relatively but not determine their thinking patterns. This version is also called “linguistic relativity”.

This paper argues that language and culture are interdependent among the Abagusii and that indigenous ecological knowledge is reflected in the Ekegusii language. Treatment outcomes in people living with HIV/AIDS will be enhanced by the use of natural products from a sustainable environment. To ensure sustainability, content for ELT materials could be developed from traditional ecological knowledge of the Abagusii, thereby promoting learners’ social responsibilities to their environment.

2.3. Vygotsky’s theory of thought, language and culture

This theory is culturally and environmentally based, where understanding the social relations of an individual is central to understanding the developmental path of that individual. The theory argues that human interactions can only be understood by looking at the culture in which the interactions are embedded (Burkholder & Peláez, 2000). “Any function in the child’s cultural development appears twice, on two planes. First, it appears on the social plane, and then on the psychological plane.” (Vygotsky, 1983, p. 163). According to this theory, language plays several roles, including shaping the overt behaviour of individuals as well as influencing their covert behaviour. Vygotsky opines language can be acquired when children are able to learn or relate their actions to the social-

environmental contingencies.

Vygotsky (1986) proposes that the first general concept acquired by verbal children is the understanding that every object should have a name which then evolves into thoughts in the form of needs and wants. Thus, language and thought express a reciprocal relationship. In sum, thought development is dependent on language, and language is socially determined. Therefore, a child's environment and culture play a pivotal role in language and thought development. Following the teaching of English for social responsibilities approach, Vygotsky's theory of thought, language and culture can help explain the learning of English through culturally ingrained environmental and health information. The environmental conservation stories of the Abagusii and how they view the management of conditions such as HIV/AIDS will help develop ELT materials that will promote environmental sustainability in the long run.

3. Methodology

3.1. The study location

Data for this study were drawn from Kisii County, one of the 47 counties in Kenya. The county is located in South Western Kenya and is mainly inhabited by the Abagusii. The county borders Nyamira County to the north east, Narok County to the south and Homabay and Migori Counties to the west. The county is divided into seven constituencies, namely: Kitutu Chache, Nyaribari Chache, Nyaribari Masaba, Bonchari, Bomachoge, Bobasi, and South Mugirango. According to the Kenya National Census (2019), Kisii County has a population of 1,266,860, out of which 661,038 are female and 605,784 are male. The census report also indicates that the population density stands at 958 people per square kilometre. Most of the population resides in urban centres including Nyamache, Moticho, Suneka, Nyamarambe, Keumbu, Mosochi, Kiogoro, Keumbu, Tabaka, Marani, Kenyena, Gesonso, Nyacheki, and Ibencho.

Kisii County is divided into three ecological zones, comprising the Upper Midland (UM), 75%; Lower Highland (LH), 20%; and Lower Midland (LM), 5% (Kisii County Government, 2018-2022). The county exhibits a highland equatorial climate resulting in a bimodal rainfall pattern with an average annual rainfall of 1,500 mm. The long rains are between March and June, while the short rains are received from September to November, with the months of January and July being relatively dry (Kisii County Government, 2018-2022).

3.2. Research design

This study adopted the sequential mixed design, which combines elements of qualitative and quantitative research approaches in terms of data analysis and inference techniques for the broad purposes of breadth and depth of understanding and corroboration (Johnson et

al., 2007). The study specifically followed the qualitatively driven sequential design, implying that the qualitative strand was more heavily weighted than the quantitative strand. The design is summarised as follows: quan → QUAL (qualitatively driven sequential design). The study started off with the quantitative analysis of adherence data of immunosuppressed PLHIV in order to advance the perspective that immuno-deficiency has a nutritional link (see Tables 2-4). The study progressed to the qualitative analysis of locally accessible nutritional information and the role of TEK on ecological management. The mixed paradigm, therefore, uses the results from one method to help develop or inform the other method (Greene et al., 1989, p. 259), thereby achieving what Johnson and Christensen (2017) refer to as multiple validities legitimation. Given the higher weighting on the qualitative strand, the study was mainly ethnographic in order to take a cultural lens to the study of living with HIV/AIDS and how they managed their treatment outcomes through environmental management initiatives.

3.3. Sampling

Seven groups, including three self-help groups and four community-based organisations, were selected to participate in a three-year project on intervention measures in the management of HIV/AIDS prevalence in Kisii County. To select the groups, snowball sampling was employed. The researchers' interest in eligible groups was threefold: groups that are registered; with members living with HIV/AIDS; and, dealing with HIV/AIDS advocacy and environmental management activities, including cultivation of traditional food crops and herbal plants used by Abagusii. Our primary source was Enkomoni Self-Help Group, through which six other groups were identified. Specifically, the exponential non-discriminative snowball sampling was used in which each new referral referred us to other groups with similar traits until seven groups were selected. Given the social stigma associated with HIV/AIDS in Kisii County (Maroko et al., 2019, 2020), snowball sampling was deemed most suited for identifying the sample. The selected groups are summarised in Table 1.

Table 1: Selected groups

Name of group	Group type	Location	Members
Enkomoni	Self-Help Group	Nyamache	20
Moticho Muungano	CBO	South Mugirango	32
Raganga New Vision	CBO	Kisii Chache South	21
Boma Bidii	Self-Help Group	KTRH	19
Hope Herbalists	Self-Help Group	Kisii Stadium	15
Together Twaweza	CBO	Ogembo	19
Mesaria Empowerment	CBO	Etago	15
Total	7	-	141

3.4. Data collection

Collection of quantitative data involved document analysis of HIV/AIDS adherence charts from selected health facilities where members of the seven groups visited for antiretroviral therapy. Of interest to this study were data on the number of scheduled visits, missed appointments, defaulters and viral load counts. This information provided pertinent baseline data for the contextualisation of subsequent understanding of respondent views on traditional ecological management strategies and how these impacted HIV/AIDS management.

In addition to the quantitative data collection, focus group discussions involving members in the seven groups were carried out to collect qualitative data for analysis. The qualitative data included personal accounts about the management of HIV/AIDS; traditional knowledge on food crops, their medicinal effects and farming; herbal plants used in the management of HIV/AIDS; and traditional methods used in conserving the environment. Themes shaping the focus group discussions were derived from these data groups.

To create a freer environment to foster self-disclosure, we selected ten members per group through simple random sampling. Onwuegbuzie et al. (2009) have guided that focus groups should include enough participants to yield diversity in the information provided, yet they should not include too many participants as they can create an environment where participants do not feel comfortable sharing their thoughts, opinions, beliefs, and experiences. Focus group discussions have been found to generate information on collective views and the meanings that lie behind those views (see Gill et al., 2008). Morgan (1998) adds that focus group discussions are useful in generating a rich understanding of participants' experiences and beliefs.

Members of each group were given the discussion themes and asked to hold brainstorming sessions that lasted about thirty minutes, after which selected discussants from a group were asked to lead plenary discussions that lasted one and a half hours. One of the researchers would act as the moderator of the discussions while the other three took notes and/or audio-recorded the discussions. One advantage was that we had established rapport with the groups based on previous encounters on different activities in our three-year project. As such, the members of each focus group felt relaxed to share their narratives freely. Having employed focus group discussions in the project before, we moderated the discussions without injecting our views to ensure high-quality data.

3.5. Data analysis

To analyse focus group data, the constant comparison analysis approach was employed. This method works well especially where multiple focus groups are involved in the same study (Onwuegbuzie et al., 2009). In this way, we were able to assess saturation across the seven groups, and individual group saturation in particular. Because focus group data are

analysed one focus group at a time, analysis of seven focus groups effectively served to assess if the interrelationships between HIV, adherence and TEK that emerged from one group also emerged from other groups. Onwuegbuzie et al. (2009) call this design an emergent-systematic focus group design, where the term “emergent” refers to the focus groups that are used for exploratory purposes and “systematic” refers to the focus groups that are used for verification purposes.

Given the low literacy among self-help group/CBO members, a narrative analysis approach was employed to complement constant comparative analysis. Narrative analysis is a useful method for uncovering the underlying ideologies embedded in stories and the larger culture that creates the stories (Rodriguez, 2016; Stokes, 2003). Specifically, a dialogic/performance analysis focusing on the who, what, and why of narratives (Riessman, 2008) was employed to understand how narrators in the focus groups constructed the interrelationships between HIV, nutrition and TEK through their lived experiences.

3.6. Ethical considerations

To address the ethical implications of the study, clearance was given by Chuka University Institutional Ethics Review Committee under Approval Number CU/IERC/NCST/1853. Further, Research Permit Number NACOSTI/P/18/50245/24190 was granted by the National Commission for Science, Technology and Innovation (NACOSTI). At the study site, the researchers explained the aims and objectives and mutual benefits of the study and consequently administered the informed consent form.

4. Results and discussion

This section is organised around a discussion of the findings on HIV/AIDS treatment adherence and progresses to traditional environmental knowledge on food crops and herbal plants that are immunity boosters to people living with HIV/AIDS. Findings on traditional environmental sustainability strategies are also discussed, including Abagusii naming patterns, the role of women and organic farming. Content in this section could form sources of input for ELT activities.

4.1. HIV/AIDS treatment adherence

Viral load data in this study revealed that newly infected PLHIV attending Comprehensive Care Centres in health facilities undergo load testing after six months uptake of antiretroviral therapy (ART). Those whose results show viral loads of less than 1000 cc/ml are said to have suppressed the virus well and continue ART for the next three months, when they take another test; then, after one month until the virus is reduced to untraceable levels. The people responding well to ART are advised to continue using the same regimen

of antiretroviral drugs. Those whose results show more than 1000 cc/ml are put on a different regimen. In the year 2018, some adolescents did not suppress viral loads despite being exposed to antiretroviral therapy for the first six months. The patterns are summarised in Tables 2 and 3.

Table 2: Adolescents viral load trends at Iyabe Hospital in 2018

		Clients on ART > 6 months	No. done viral load	VL < 1000 cc/ml	VL > 1000 cc/ml	No. not done VL	% suppression
1.	Jan.-Mar.	30	28	18	11	2	60
2.	April-June	35	35	32	3	0	91
3.	May-Sept.	36	35	21	4	1	58

Source: Health Records Office, Iyabe

Table 2 indicates that between the months of January-March in 2018, 36% (11 adolescents) did not suppress their viral loads despite being on ART for six months while two people (4%) defaulted undertaking viral load tests. However, in the months of April-June 2018, a higher number of adolescents (91%) indicated suppressed viral loads for the same period, while 9% did not suppress. The table also indicates that between the months of May-September 2018, 58% of adolescents indicated suppressed viral loads, while 11% did not suppress. One adolescent was not tested. In effect, for the period January-September 2018, a total of 17 youths recorded poor viral load suppression at more than 1000 cc/ml.

Comparatively, adults showed better suppression rates than adolescents in the same year. But still, some indicated poor suppression, as demonstrated by Table 3.

Table 3: Adults viral load trends at Iyabe Hospital in 2018

		Clients on ART > 6 months	No. done viral load	VL < 1000 cc/ml	VL > 1000 cc/ml	No. not done VL	% suppression
1.	Jan.-Mar.	537	526	498	18	11	93
2.	April-June	550	543	533	10	7	98
3.	May-Sept.	536	532	522	10	6	98

Source: Health Records Office, Iyabe

Table 3 shows that between January-March 2018, out of 526 adults who undertook viral load screening, 93% indicated suppressed loads while 3% did not suppress. Between April-June 2018, out of 550 adults on ART 98% suppressed while 2% did not suppress. Similar

patterns emerged between May-September. It is notable that a significant number of adults (38) recorded poor suppression (more than 1000 cc/ml) between January-September 2018.

Data in health facilities also indicated that significant numbers of PLHIV defaulted monthly visits for the collection of medication. Table 4 indicates the defaulter management patterns at Magena Hospital in the county in the year 2019.

Table 4: Defaulter management chart at Magena Hospital in 2019

Indicator		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.
A.	Expected scheduled visits	379	361	308	330	276	253	260
B.	Missed appointments	59	61	44	59	38	40	52
C.	% missed appointments (B/A*100)			14	18	14	16	20
D.	Traced	59	61	44	59	38	40	52
E.	Returned to care	34	40	33	35	-	-	40
F.	% returned to care (E/B*100)	58	66	75	59	-	-	77
G.	Defaulters	15	16	10	20	-	-	13
H.	Defaulters last month	13	18	19	13	-	-	6
I.	Traced	13	16	19	13	-	-	6
J.	Returned to care	4	4	8	4	-	4	10
K.	% returned to care ((I/G*100)	73	75	80	20	-	-	77
L.	Death	3	0	0	1	1	-	1
M.	Self-transfer out	0	0	0	0	0	0	0
N.	Declined treatment	0	0	0	0	0	0	0
O.	Lost to follow-up	4	1	3	-	-	-	2
P.	% LTFU	27	-	-	-	-	-	15

Source: Health Records Office, Magena

Table 4 shows that in 2019, 353 missed appointments were reported for a period of seven months. Although all the missed appointment cases were traced, only 182 were returned to ART in the same period. The table also indicates that a cumulative number of 69 were no longer using ART services. Although almost all of them were traced, only about half accepted to revert to care (ART uptake). It is also notable that for the same period, ten people can no longer be traced (lost to follow-up).

Tables 2 and 3 have provided evidence of cases of poor viral load suppression among PLHIV, while Table 4 has indicated the numbers defaulting ART. With this data, we sought to know during focus discussions the reason for the lack of suppression and/or defaulting use of ART services in some people. An adult female community health volunteer in one of the focus group discussions narrated:

TEXT 1

I contracted HIV about two years ago. Sometimes I feel like I should not take ARVs anymore. The ARVs are very powerful. I can't withstand the dizziness I experience after taking them. I feel I am better off without them. Having lost my husband two years ago, and with full responsibility to fend for my family, I can't afford to buy enough to eat. As a new member to this self-help group, I hope things will change.

A similar explanation was elicited from another focus group. This time, an adult male peer counsellor blamed the current HIV/AIDS programme implementing partners for not giving them food incentives like earlier ones. He said:

TEXT 2

I have lived with HIV since 1986. Those days, implementing partners would supply us with food incentives to increase adherence to ART. When they supplied us with food, I took all my drugs as instructed, and I felt healthier. But when they stopped, I asked myself: Why would I waste my time visiting a medical facility for drugs when the current partner gives us no food? When my viral load rose sharply, I joined this CBO for support.

Corroborating the views of respondents 1 and 2, respondent 3, a male youth peer counsellor who had defaulted going for ART, argued that without food, there was no need to take ARVs initially. He said:

TEXT 3

I had little to eat for those powerful drugs. On an empty stomach, the drugs caused a burning sensation in my chest and even stomachache. Imagine taking sugar-less maize flour porridge or *ugali* (local popular meal made from maize flour) and *sukuma wiki* (kale) to give me the energy I need to take ARVs! Of course, when I joined this CBO, I have learned how to meet my nutritional needs more affordably.

It is evident from these views that poverty and poor nutrition among PLHIV in Kisii County partly explains the poor adherence to ART. According to the Ministry of Health (2015) STEP-wise Survey, 95% of adults aged 18–69 years did not consume the WHO daily recommended five servings of fruits and/or vegetables. Therefore, there is a correlation between poor adherence and weak immunity. Food insecurity continues to persist in Kenya due to the stagnation of agricultural production, high food prices, frequent disasters and the effects of climate change on the mainly rain-fed agriculture (Ministry of Health, 2018). In the next section, we discuss traditional food crops and herbal plants with immunity-boosting properties in the context of TEK that could improve adherence to ART and/or health outcomes of PLHIV.

4.2. Abagusii traditional food crops

Arising from focus group discussions, the Abagusii people have a set of traditional food crops they grow for their nutritional and health benefits. These are presented in TEXT 4. Each entry involves the local name, English name and botanical name respectively. English and botanical names were provided by the researchers after focus group discussions.

TEXT 4

1. *Emboga/Ototo* – Amaranth – *Amaranthus sp.*
2. *Rinagu* – Nightshade – *Solanumnigrum*
3. *Enderema* – Vine spinach – *Basella alba*
4. *Chinsaga* – Spider plant – *Gynandropsis gynandra*
5. *Risosa* – Pumpkin leaves – *Cucurbitasp*
6. *Omwongo* – Pumpkin – *Cucurbita*
7. *Egesare* – Cow peas – *Vignaunguiculata*
8. *Amaemba* – Sorghum – *Pennisetum glaucum*
9. *Obori* – Finger millet – *Eleusine coracana*

According to the views of focus groups members, food crops 1-9 have been used by Abagusii people since time immemorial for their nutritional and medicinal effects. For instance, *enderema* (vine spinach), *chinsaga* (spider plant) and *risosa* (pumpkin leaves) are recommended for people with iron deficiency, like pregnant and lactating women. Generally, food crops 1-9 provide an array of health benefits, including iron, protein, vitamins, calcium, magnesium, phosphorus and amino acids, and they act as antioxidants which are beneficial to people living with conditions including HIV/AIDS, diabetes, hypertension and cancer. For this reason, the self-help groups/CBOs in this study grow some of these crops communally or individually in their home gardens. They also ensure that each member can access any food supply through barter trade. A mentor mother at Moticho CBO said:

TEXT 5

When we come for our meetings weekly, we encourage each of us to bring what they grow. After our meetings, a member exchanges what she has with what she doesn't grow at home. For instance, if I grow *amaemba* (sorghum), I can exchange with one with *obori* (finger millet). In this way people can get what they don't have without spending money.

4.3. Herbal plants used in the management of HIV/AIDS

The herbal plant biodiversity in Kisii County ranges from large to stunted trees, shrubs, herbs and succulents (Mokua et al., 2020). Among the self-help groups/CBOs in this study,

it was Hope Herbalists who specialised in ethnomedicine. It emerged from the group that Abagusii people have over one hundred herbal plants used in the management of various ailments. However, eight plant species are commonly used for the management of HIV/AIDS and its opportunistic infections. These are presented in TEXT 6:

TEXT 6

10. *Ebao* (Cactus pear herb) – *Opuntia ficus-indica* (Cactaceae)
11. *Omonyangateti* (Arabic num-num) Shrub – *Carissa edulis* (Apocynaceae)
12. *Omogaka* (Aloe) Herb – *Aloe vera* (Liliaceae)
13. *Risibi ribariri* (Klip dagga, Christmas) – *Leonotis nepetifolia* (L.) R. Br. (Lamiaceae)
14. *Ekemiso* (Burbark) Shrub – *Triumfetta macrophylla* (Malvaceae)
15. *Omoterere* (False Assegai) – *Maesa lanceolata* (Myrsinaceae)
16. *Omoiri* (Red stinkwood) – *Prunus africana* Rosaceae
17. *Omonyasese* (Blue glory bower or blue butterfly bush) Shrub – *Clerodendrum myricoides* (Hochst) R. Br. & Vatke (Lamiaceae)

Opportunistic diseases arising from low immunity, which are managed by the herbal plants 10-17, include wounds, gonorrhoea, syphilis, fever, herpes simplex, malaria, pneumonia, dry cough, diarrhoea and hypertension. During the group's meetings, knowledge sharing includes information about the herbal plants of Abagusii people, methods of preparation, treatment, and how to establish herbal gardens. Regarding preparation, a member of the group illustrated in TEXT 7:

TEXT 7

To prepare *Ebao* (Cactus pear herb), thorns on the succulent branches are removed, then the branch is washed and cut into small pieces, which are then boiled in water until boiling point. The content is left to soak for 6-7 hours before being decanted.

Members of Hope Herbalists indicated that most of their medicines are either powders or concoctions made from a combination of herbal plants for effective management of opportunistic infections. According to Mokuia et al. (2020), herbalists use combinatorial therapy for the purposes of providing synergy.

It also emerged in this group that herbal plant species are disappearing fast due to climate change and human activities, forcing practitioners to travel to other counties such as Nyamira and Narok for herbs. However, some had made the effort of creating medicinal gardens in their homes. The gardens are used for demonstrations during group knowledge sharing and as sources of supplies for traditional medicines. Despite the role of traditional healers in providing alternative or supplementary medical support to PLHIV, the county administration has not provided the support they need to thrive and grow. A member of the group said:

TEXT 8

Most of the people who visit my clinic suffer from opportunistic infections such as TB. I had a case of a person suffering from TB who couldn't recover after visiting various hospitals. Using my drugs, I treated the person to full recovery. But now, implementing partners discourage people from seeking traditional medicine. The County Government isn't doing any better to enact laws that can protect and develop our practice. All we are asking as traditional healers is recognition and integration of our services into Government healthcare provision framework.

It is apparent that people in the rural areas of Kisii County still prefer ethnomedicine to conventional medicine. According to Nyamwamu and Nyamwamu (2020), common plant treatments are known and used by the majority of rural people. In their study, it emerged that 166 plant species representing 68 genera and 48 families are commonly used by the Abagusii traditional medical practitioners. Sapir (1912) acknowledges that language is materially influenced by the environmental background of its speakers. This also fortifies the view that the work of traditional knowledge, in the possession of traditional healers, needs to be recognised as a measure towards environmental sustainability.

4.4. Preservation of biodiversity through naming

To show a spiritual connection between people and the environment, names of food crops and herbal plants are also given to human beings among the Abagusii. Examples elicited from the focus groups in this study are listed in TEXT 9:

TEXT 9

18. *Amatoke* (Bananas) – Matoke (Male name)
19. *Egesare* (Cowpeas) – Gesare (Female name)
20. *Emboga* (Amaranth) – Mboga/Omboga/Nyamboga (Male name)
21. *Oboke* (Honey) – Nyaboke (Female name)
22. *Emeraa* (A type of shrubs) – Moraa (Female name)

As can be seen, some of the Abagusii male and female names are derived from common food crops, herbal plants and insects (bees) that are critical for pollination and production of honey which is used as food and as a drug for several ailments.

Similarly, some places among the Abagusii people are named after the traditional food crops and herbal plants that thrived in those places. Members of focus groups suggested examples as listed in TEXT 10:

TEXT 10

23. *Risibi ribariri* (Klip dagga, Christmas) – Nyamasibi
24. *Chinsaga* (Spider plant) – Nyansaga

25. *Rinagu* (Nightshade) – Nyainogu
26. *Risosa* (Pumpkin leaves) – Masosa
27. *Omosocho* (broad-leaved croton) – Mosocho

Naming human beings and places after the names of food crops and herbal plants expresses the interdependence between man and the environment. Partly, this is because plants provide our basic needs such as shelter, food, medicines and clothing (Aunga, 2018). Similarly, Lakoff and Turner (1989) note that in metaphor studies, it is possible to comprehend general human character traits in terms of well-understood nonhuman attributes such as plants. There is a need for the initiation of environmental conservation actions to restore the era when places produced what they are named after.

4.5. Transmission of TEK through rituals

During the focus group discussions, it also emerged that traditional environmental knowledge was transmitted through Abagusii rituals. It was reported that on the eve of the seclusion period after the initiation of boys, a ritual called *chinyangi* was performed where the initiate was taught all the medicinal plants of the Abagusii, where they grew, how to extract medicine from them and how to conserve them. It was also reported that special songs and dances (*ribina*) were performed during prolonged droughts to attract rain. To ensure that when the rain came, it was not violent and destructive, a ritual was performed (*ogokireka*) which required people to abstain from any form of work for a whole week. Environmental knowledge was also transmitted through songs that were performed during work or beer parties. A rendition of TEXT 11 was made by an adult male member of a focus group.

TEXT 11

Ekebwe ngiakura manga nse
Ee manga nse ekebwe ngia kura
Ee manga nse baba motegere nyangweso, ndi ndi ndi
Obori bwa baba keande, ee keande obori bwa baba
Obori bwa baba keande, ee keande baba motegere nyangweso, ndi ndi ndi
Obori bwa baba matogoro, ee matogoro obori bwa baba
Ee matogoro baba motegere nyangweso ndi ndi ndi
Ee nyangweso yacha Enyangweso yacha yaboriaa
ee yaboria baba motegere nyangwesoo

A fox is crying down the cliff
 Down the cliff a
 Mother, watch out for the locust
 My mother's millet is healthy, my mother's millet is healthy

Mother, watch out for the locust
The locust came and ate my mother's millet
Mother keep watch of the locust

This alerts the farmer to take heed of the fox's warning that locusts or birds are likely to infest the finger millet. Therefore, the farmer should ward off the locusts by erecting scarecrows on the farm. The song also reminds us that finger millet is held dear by the Abagusii.

4.6. Role of women in traditional food crop farming

Self-help groups and community-based organisations specialising in traditional vegetables and herbal plants obtain seeds from the previous season's crop. In particular, elderly women in the groups have specialised in seed production, processing and storage. These women either share the seeds among support group members or offer them at a small fee. A visit to the offices of Mesaria Empowerment Community-Based Organisation revealed bottled seeds of assorted traditional vegetables such as amaranth (*emboga*), spider plant (*chinsaga*), nightshade (*rinagu*), pumpkin (*risosa*), cowpeas (*egesare*), sorghum (*ememera*), and finger millet (*obori*). According to the Chairlady of the Group:

TEXT 12

I use these seeds as training aids for this group. As a result, each of our members has a kitchen garden of some of these vegetables. We receive updates from each member during our weekly meetings to ensure nobody is left behind. We even visit the members' homes to inspect their gardens and advise them accordingly. Consequently, no group member faces nutrition challenges or weekly subscription to our revolving fund.

The treasurer of Enkomoni Self-Help Group also noted that women are the drivers of traditional vegetable farming in their group. She said:

TEXT 13

As a group, the elderly women you see here are the custodians of seeds. They are the ones who supplied the seeds for the spider plant, nightshade, cowpeas, and pumpkin leaves on this farm. We sell produce from this farm to grow our savings and share some for our nutritional needs. We also exchange seeds when we come for group meetings for members to plant in their homes.

These testimonies demonstrate the awareness among members of the group that adherence to ART is hinged on nutrition. It is encouraging to note that the members have devised a less-costly and sustainable way of addressing nutrition and generation of revenue from the

sale of traditional vegetables.

Women are also specialised in seedbed preparation, planting, harvesting and selling the vegetables. As a member of the Raganga New Vision attested:

TEXT 14

Women are the custodians of traditional knowledge on planting seasons, seedbed preparation, harvesting and marketing the vegetables. We have the skills for harvesting in a way that allows rejuvenation of the crop. Few men, if any, can do that. Further, men in this group can't be allowed to sell the vegetables for they do not know how to match quantities and amounts. We involve them in other crops, not vegetables.

It can be concluded that women play a pivotal role in the production, processing and marketing of traditional vegetables. For sustainability, there is a need for documentation of this knowledge and sensitisation of younger women in the practice.

4.7. Organic farming

Most of the groups carrying out farming of different food crops practice organic farming. Since the groups practice animal farming as well as plant farming, they use droppings from poultry, goats and sheep, and dung from cows for healthier crops. The Chairperson of Enkomoni Self-Help Group noted:

TEXT 15

All members in this group practice organic farming. It took an experiment to convince them. We subdivided the portion of this farm at that corner into three equal parcels. On one, we planted the spider plant using inorganic fertiliser. On another, we used organic manure, while on the third, we didn't apply any fertiliser. We did the routine thinning of the crop. After a month and a half all of us met at the farm to see the outcome. The crop that received organic manure was the healthiest, followed by the one on inorganic manure, with the one with no manure coming third. We all resolved to go for organic manure in our homes.

A member of Moticho Muungano CBO also emphasised that traditional food crops and herbal plants do well when organic manure is applied. He said:

TEXT 16

I collect cow dung, goat and chicken droppings and heap them at the corner of my farm to decompose. I use ash to break the droppings into fine particles. I also heap maize husks with the droppings. During the planting season, I apply a small portion of the manure per seed or seedling. The result is out there for you to see.

An interesting organic method of controlling pests was articulated by the Chairperson of Enkomoni Self-Help Group. He narrated as follows:

TEXT 17

We do not use pesticides on our vegetable garden. We use a traditional method involving applying ash from our fireplaces mixed with ash from the black jack plant. We have found this to be a very effective way of keeping pests at bay and also ensuring that the vegetables are safe from poisonous pesticides.

Generally, there is a link between agriculture, food security and health outcomes. According to the Ministry of Health (2018), challenges in the chain of food production to the consumer affects dietary adequacy that leads to nutritional problems at household level. Traditional environmental knowledge could reverse the situation. Yet although Act 33 of 2016 of the Laws of Kenya empowers communities to promote their traditional knowledge and traditional cultural expressions, control their uses and benefit from their commercial exploitation, this has not happened. For sustainable environmental management, TEK needs to be harnessed and popularised across the community for implementation. One channel should be through materials used for ELT.

5. Concluding remarks

Important traditional knowledge on traditional food crop farming and animal rearing can have implications for English language teaching (ELT). For instance, ethnobotanical information on the important plant species, their forms and characteristics can be collected. This can also include identifying and documenting vegetable species and herbal plants under threat and documenting information on home conservation through establishment and maintenance of home seed banks and retention of traditional practices that encourage genetic diversity. Information on seedbed preparation techniques, growing of traditional foods and herbal plants, harvesting, marketing, cooking and eating can also be harnessed. Further, materials that discard the false and unwarranted notion that traditional foods are inferior by indicating their health benefits in comparison with exotic vegetables like cabbage and kale and also information that promotes indigenous knowledge about edible plants, methods of preparation, local names, planting seasons and places can constitute crucial content for ELT.

In a competency-based learning context, learners can explore, manipulate and manage available content and use it not only to conserve the environment sustainably but also to learn English. The language teacher can use the content to design and implement learning activities in and out of the classroom that can promote conservation of traditional food crops and herbal plants. Content on traditional methods of conserving the environment and improving nutrition can be used by the language teacher to design the following class activities:

- (a) Case studies
- (b) Film and video clips
- (c) Drama/role play
- (d) Primary research tasks

Based on these class activities, ELT lessons can adopt a three-tier framework incorporating a classroom activity, integrated tasks and practical actions, as illustrated in Table 5.

Table 5: Sample ELT lesson

Classroom activity	Integrated tasks	Practical actions
Watch video clips about the spider plant as follows: <ul style="list-style-type: none"> (a) Preparation of seeds (b) Preparation of land for planting (c) Harvesting the crop (d) Cooking and its health benefits 	<ul style="list-style-type: none"> • Comprehension questions • True/False statements • Information transfer (fill in a grid with key details from the text) • Vocabulary development • Grammatical focus on recently learnt structures 	<ul style="list-style-type: none"> • Write a formal email to a spider plant farmer requesting spider plant seeds. • Design a survey to find out the consumer trends on the spider plant. • Create a campaign to raise awareness of the immunity-boosting properties of the spider plant. • Write a recipe for the spider plant. • Write a speech to be delivered during the Abagusii Cultural Night on the health benefits of the spider plant.

To implement this language learning framework, the language teacher must double up as a researcher. The teacher can form teams with practitioners from other communities and disciplines to gather contextualised cultural content on environmental sustainability, use it to develop ELT materials in the context of competencies-based curricular for the learning and testing of listening, speaking and writing. Such materials could include reading comprehension passages, songs, poems, recipes, dialogues, short stories, news, and re-writing exercises.

The competency-based curriculum being rolled out in Kenya presents an unrivalled opportunity to publishers, material developers and teachers of English to design and generate materials which address the reciprocal relationship between traditionally-driven environmental sustainability and health. Investigative content on traditional methods of ensuring environmental sustainability could breathe some freshness into ELT materials,

paving the way for the teaching of integrated English in interesting ways while at the same time restoring the environment, food sufficiency and health. The desire in learners to not only acquire knowledge on environmental sustainability in the classroom but also to use it to undertake real environmental conservation activities such as seedbed preparation, tree planting, intercropping, irrigation, harvesting and processing of harvests will be the hallmark of ELT programming and implementation.

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