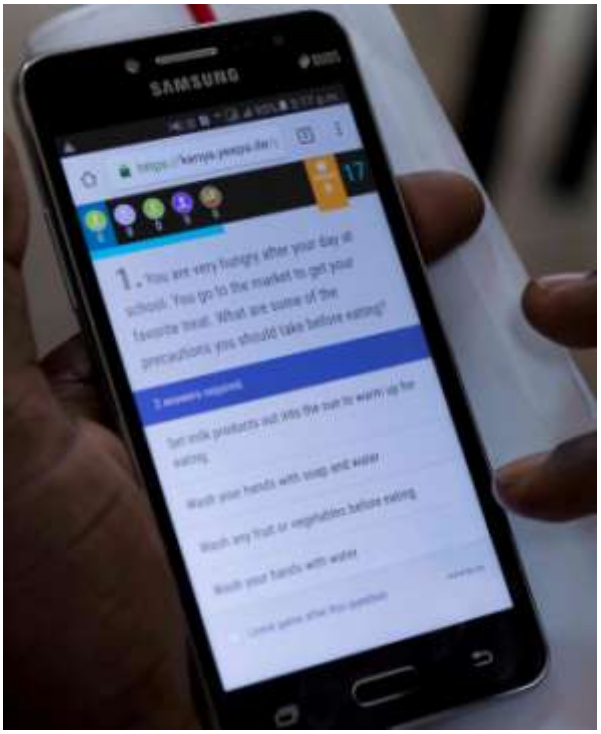
lab of tomorrow

Health Games Kenya

giz

Improving Health Literacy in Kenya: Awareness, Education and Training with Analytics Through Continuous Mobile Gaming



Nairobi, Berlin - 10 July 2017

Report on Mobile Health Games Consultations and Inception

JSI

gamelab.berlin

SNTLPUBLISHING

inSupply

SURFHERO

About HealthGames Kenya

- HealthGames Kenya provides a digital empowerment strategy for health competences transported by a competitive learning game played **together** online. The aim: to become the preferred online learning platform for massive health literacy development.

- HealthGames Kenya fosters people's "knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course".[1]

- " … the consultations demonstrated the feasibility and market opportunities for mobile game based health education in Kenya across a variety of organizations and industries. As next steps, the HealthGames Kenya team is following up on expressions of interest from more than ten corporations and organizations for applying the gaming concept to better achieve their objectives."[2]

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[1] Sørensen, K./van den Broucke, S./Fullam, J./Doyle, G./Pelikan, J./Slonska, Z./Brand, H. (2012): Health literacy and public health. A systematic review and integration of definit
ions and models. BMC Public Health 12, 80

[2] See Chapter 9, Obstacles and Value Proposition

Contents

HealthGames Kenya is Online

Invite your friends for a mobile healthy game.

The more you are, the more fun,

and the better for your healthy minds!

Get the Jackpot and be a winner!

https://kenya.yeepa.de

1. Introduction

As a result of the ***GIZ Lab of tomorrow*** workshop in March 2017 the following organizations agreed to start a consultation process about the feasibility of online Health Games in Kenya:

- John Snow Inc.'s East African affiliate, inSupply Consulting Services
- gamelab.berlin of Humboldt University, Germany
- Surfhero UG, Germany and
- SNTL Publishing, Germany

Together with the ***Lab of tomorrow***, the four institutions produced in May 2017 the first African mobile multiplaying Health Games website with two health games ready to play: ***HealthGames Kenya***

The aim: to provide a service for engaging large populations and professionals in serious educational mobile games for improved health literacy, and using game embedded knowledge analytics to better coach people's individual and collective health competences.

The games have an in-built capability for measuring impact, continuous monitoring and quality assurance concurrently as the platform is used for capacity and awareness building, education and training.

During the course of May and June 2017, the partners consulted and engaged with stakeholders in Kenya, Germany and the USA around the concept of implementing mobile games for health as a way to build knowledge, skills and generate data useful for program improvement**.**

In Kenya the project team conducted five separate workshops and held a number of additional bilateral meetings to demonstrate and refine the concept of mobile gaming for health and other industries including telecommunication. The concept was shared with over 100 representatives from educational institutions, hospitals, mobile service providers, NGOs, donors, pharmaceutical corporations and the healthcare industry.

With the ***HealthGames Kenya*** website already online, the project team could engage the audiences of workshops and meetings in live mobile tournaments using the mobile devices of each participant. Online surveys as part of the live gaming documented an overwhelming positive feedback, as can be seen in the "Acceptance" and "Results of Surveys" chapters of this report.

In conclusion the consultations demonstrated the feasibility and market opportunities for mobile game based health education in Kenya across a variety of organizations and industries. As next steps, the team is following up on expressions of interest from more than ten corporations and organizations for applying the gaming concept to better achieve their objectives.

This report presents the concept and major components of HealthGames Kenya and summarizes the very valuable input received so far. The project partners are grateful for the welcome and great engagement in Nairobi by the many stakeholders coming from many different backgrounds in May 2017.

Yasmin Chandani
John Snow Inc, Nairobi

Tom Lilge
Surfhero UG, gamelab.berlin,

Leopold Reif
SNTL Publishing, Berlin

2. Rationale

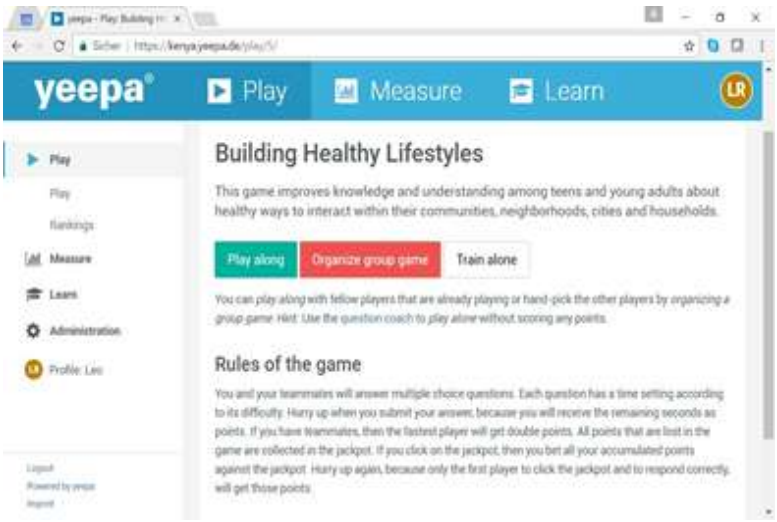
Awareness, education, and training are key in the fight against diseases. Today in this fight millions of smartphones and rapidly growing mobile networks provide a highly interactive communication, engagement and learning channel for entire populations and cohorts of professionals second to none.

It is about reach, engagement and interactivity: 86% of Kenyans use the Internet in one way or another, 21 Million (44%) of Kenyans use the Internet at home through any device.[3]

Using mobile devices allows an unprecedented reach for awareness and the organization of massive online training programs. At the same time engaging and motivating mobile learning applications with advanced analytics are available and can become the core of educational campaigns with a real impact that can be finally measured.

This is the background against which HealthGames Kenya intends to organize health education, training and awareness in the format of multiplayer online knowledge tournaments and measure its impact with game embedded psychometrics.

HealthGames Kenya is based on yeepa, a highly innovative knowledge gaming platform already operational in projects of medical education, corporate training and schools in Germany.



Just as we had our consultations in Nairobi in May 2017, the yeepa team initiated the „Typhoon Game“ in Taiwan, a mobile knowledge tournament with 5000 students, their teachers and parents about disaster preparedness.

At the same time John Snow Inc. is present in 65 countries with more than 2100 healthcare professionals organizing long-term multinational and country specific high quality capacity building health programs. The mission: improving quality, access and equity within health systems worldwide. The focus is on multidisciplinary, gender-sensitive development approaches that galvanizes countries, communities, families to advance their own skills and create lasting solutions to their priority health and development issues.

And in Berlin the gamelab.berlin conducts interdisciplinary research at the Cluster of Excellence “Image Knowledge Gestaltung”, covering both, the theoretical and historical research about the cultural technique of play and the development of innovative prototypes. Being part of the Humboldt University, gamelab.berlin embraces research fields such as game design, serious games, virtual reality, engagement science and experience design. Together with our partners, such as the Charité Berlin, Goethe Institute and Merve Publisher House, researchers from over 12 disciplines work on several projects range from “Patient Empowerment” to “Reading in VR”. In gamelab.berlin Health Games Kenya finds a research partner, providing impact measurement through data analysis and the

[3] Source of statistics about Internet Use: www.internetlivestats.com/internet-users/kenya In a recent report of www.itnewsafrica.com of June 13, 2017 the massive increase in 4G mobile subscribers in Africa is forecasted from 24 million in 2016 to 296 million by 2022. This trend will have another significant impact on mobile applications.

opportunity for scientifically valid user tests.

Surfhero UG is a start-up, spinned off the gamelab.berlin which turns excellent research into market solutions. Surfhero UG contributed to the success in the consultation phase with its entrepreneurial approach and, together with JSI, will operate the activities in Kenya.

When Health Games will be launched, the partners can build on rich, diverse, and highly relevant experience and expertise in an exciting endeavor for a healthy life of the people in Kenya.

Kenya is renowned worldwide for its cutting edge mobile applications, namely achieving an 80% financial inclusion, with mobile banking solutions contributing to this tremendous result significantly. Based on the very positive consultations in May/June 2017, the project partners are very confident to make HealthGames Kenya another shining star of mobile applications in Africa.

3. Concept

Health Games Kenya stages exciting and motivating knowledge tournaments that coach, engage and train the ever growing and connected Kenyan population towards a healthy lifestyle as well as on other relevant health issues. The target groups are students in secondary and tertiary education, health workers and healthcare professionals as important multiplicators for a healthy lifestyle.

Through an embedded analytics software the games harvest and analyze large amounts of data on:

- the actual collective knowledge and attitudes of target groups;
- the development of knowledge within these target groups over time;
- change of attitude towards health related issues.

For the gamer/learner the data are presented as an individual learning guide for better achievements in gaming and learning. The more the gamers learn, the better become their winning chances. And since gamers want to win, they learn!

For the institutions, governments, NGOs, donors and industry, the data is provided as part of an information service with anonymous collective knowledge diagnostics. In this way the games and their data support the sustainability and quality of health education, training campaigns, and market communication.

The goals of HealthGames Kenya

1. More efficient education, training, and market communication through ubiquitous social mobile learning games.

2. Knowledge and attitude analytics support individual gamers for better learning in the sense of Quantified Self.

3. Game embedded psychometrics provide collective anonymized knowledge diagnostics on impact assessments for institutions for better planning and interventions based on facts.

4. Building incrementally a digital healthcare Knowledge Observatory serving governments, healthcare institutions, NGOs, donors, and industry with reliable, valid, and objective information.

The approach represents a unique proposition to public health education, training and market communication through:

- Using online and mobile knowledge games as a way to achieve a high degree of engagement and learning of large populations and professionals, and
- constant gamified formative measurements as part of the quizzes, thus monitoring on the fly knowledge gains and change in attitudes and gathering mission critical data for interventions.

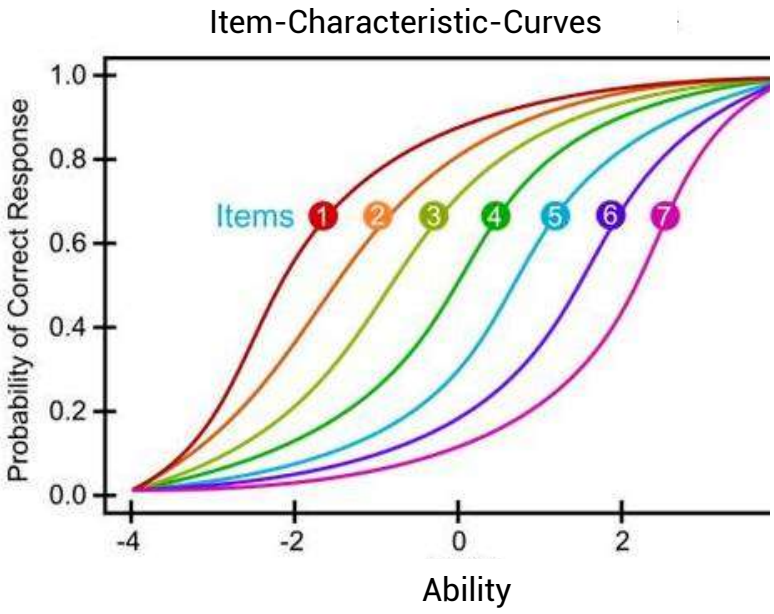
With this approach HealthGames Kenya will incrementally create the basis for a digital healthcare Knowledge Observatory as a service.

4. Digital Knowledge Observatory

The World Health Organization estimates that inadequate health competencies is responsible for three to five percent of a country's health expenditure. In Germany, this would be 9 to 15 billion Euros. It can be assumed that in African countries, health literacy can play an even more crucial role than in countries with well established health systems.

HealthGames Kenya is a tool that engages people in the subject matter of relevant health issues through playing together in motivating knowledge tournaments and measuring the impact of these games and other interventions.

Through its constant gaming, HealthGames Kenya is building the data foundation for a digital Knowledge Observatory.

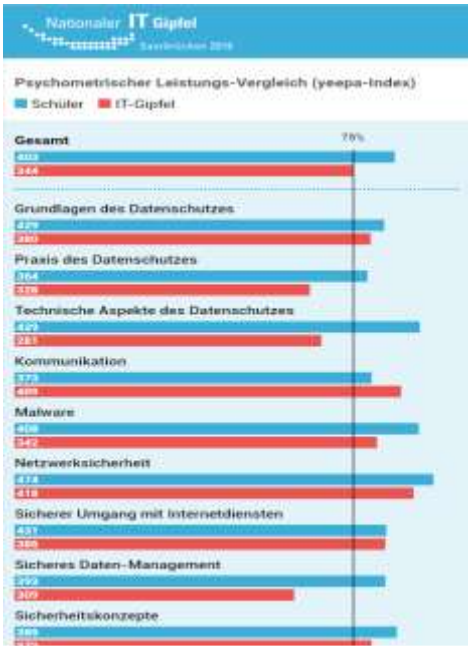


HealthGames Kenya provides the basis for a Digital Knowledge Observatory, because it can measure precisely the difficulty of questions (items) related to any specific target group. The analytics are based on the Rasch model, a methodology widely used in the test industry, and applied here for multiplaying mobile knowledge tournaments. Gamification makes continuous testing socially acceptable and allows collective knowledge diagnostics in real time. In the picture left each question is represented in one of the curves and documents a different difficulty degree measured in the course of gaming.

The digital Knowledge Observatory is a business intelligence and information service, that provides continuous well presented analytics about the impact of the education, training and awareness building endeavors on health literacy and health attitude development. The clients of this service are governments, ministries, educational and training institutions, donors, NGOs and industry, who all spend millions of Euros in this sector, and urgently need up-to-date data about the impact of their measures.

Observatories in the health sector have a long history since the 1970s of gathering, analyzing, synthesizing and sharing of reliable and quality health information on population health and health services. With HealthGames Kenya it will be possible to harvest data on health knowledge and attitude development - much sought after data with quality criteria such as objectivity, validity and reliability. Experiences from previous knowledge tournaments have shown, that the amount of data aggregated during just a single week of intensive gaming is so huge, that for interpretation purposes the expertise and organizational infrastructure of an Observatory will be needed.

5. Game Dramaturgies



A screenshot of the group performance highscore comparing the collective knowledge achievements of the three best student groups (blue) and the IT experts (red) in the Information Security Game of the German IT Summit 2016.

Staged tournaments with a good dramaturgy allow for socially accepted continous gamified testing engagement of large numbers of people inside and outside of institutions. This alone is a significant achievement that is overcoming tradional time consuming survey approaches and their bias.

Gaming puts the learner into the shoes of an athlete for whom constant performance measuring is part of life. The games create an environment in which continous measuring happens naturally and is socially accepted. This allows for a constant flow of big data to be analyzed and processed for providing meaningful indicators.

To make this happen, it is important to design a game dramaturgy, that defines roles and processes within the game and - most importantly – what actually should be measured during the game. This expertise will be offered by the digital Health Knowledge Observatory.

The tournanment on „Information Security“ during the IT-Summit of the German government in November 2016 is a good example of how an attractive gaming dramaturgy can become key to a successful gaming experience.

In this tournament setting 4000 students gamed for one week against IT experts of the IT-Summit. The staged dramaturgy created so much excitement and engagement, that the students played 440.000 questions within five days on information security, a topic they prooved to be totally uninterested in the past.

Prior to the competition the game dramaturgy had defined roles and competencies to be measured within different groups. Teacher handouts and a number of support emails were produced. Dashboards on the gaming platform were installed for monitoring not only performance of individual gamers but also that of different groups, such as teams of students, schools and „All IT experts“.

A well communicated game story promoted - through posters, emails and the information on the gaming portal - the three best student groups and offered them to become the collective benchmark to which the IT experts of the IT-Summit had to compete.

The competition was not just between individual gamers, but also between student classes to get into the Champions League of the three best groups, and then between those Champions against the IT experts of the IT summit. That was a very dynamic gaming process with ups and downs on the highscore, and although the benchmark became stabilized more and more, it was possible until the last moments of the game to become the winning team.

It is obvious that without such a design, the students would have had no chance to compete against IT experts in the game, which would have had threatened the sustainability of the game.

Providing an attractive game and survey design and then handling the vast amount of data and transforming it to a meaningful and contextual information and even a „Game Story“ is exactly the task of the digital Health Knowledge Observatory.

6. Collective Knowledge Analytics

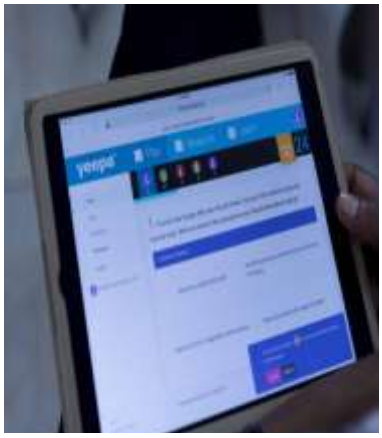
While gaming the data of individuals is continually aggregated to collective data. This results in a Collective Competency Index for each targeted group or institution.

Example:
Health workers in the Nakuru county participate in a knowledge competition about “family planning“. After one month the games have produced enough data so that the collective competence of health workers in Nakuru can be compared with the one in the county of Machakos, or any other county in which health workers participate in the games. In the course of the games the Collective Knowledge Index will be created for each county and the highest Index will be the benchmark to which all other counties will be measured against.

Collective Knowledge Indices can also be created for institutions, such as hospitals and universities. The knowledge competitions within and between hospitals would create Hospital Knowledge Indices, define benchmarks and lead to or support a certification and national reward scheme. Comparable to a stock index, these various Collective Competency Indices can be aggregated to a National Healthcare Knowledge Index. This index shows various knowledge benchmarks and compares these with the performance results of institutions and people over time.

Finally capacity building achievements in different regions, institutions and groups can be measured and compared. Conclusions about what worked and what not can be drawn based on facts. Instead of input, stakeholders are able to measure the impact. Most importantly the people engaged in the field, the doctors, nurses, health workers, patients, the wider community get a real picture of competences and attitudes in their profession and the services provided.

With a large scale health game in the forthcoming Pilot Phase a number of the service components of a digital Knowledge Observatory will be designed, and data will be aggregated for group and institutional knowledge indices.



Health Games Kenya is based on the multiplayer quiz platform yeepa, used already in Germany in a number of flagship projects with different game topics and can therefore build on rich experiences in online knowledge gaming with embedded psychometrics.

The games are based on the simple dramaturgy of multiple choice questions. They are fast to produce and efficient to distribute. They are enriched with gaming features and can be designed for simple up to highly demanding knowledge levels.

Participation can be totally anonymous. But over time the Games provide a precise collective and anonymized “Knowledge Map” on health knowledge and attitudes which can then be used for interventions in the field based on facts: for schools, universities, health care services, local authorities, the health industry, donors, NGOs, and governments.

7. Acceptance

During the week of May 22nd 2017, the project partners discussed concept and perspectives of HealthGames Kenya with more than 100 stakeholders, such as county healthcare workers, supply chain managers, computer science and PhD students from the University of Nairobi, as well as representatives from donors, NGOs and the healthcare and telecommunications industry with the aim to gauge

I. the appeal of the games
II. identify any constraints to use
III. identify any unintended outcomes (positive or negative)
IV. identify potential partners for implementation

The sessions began with an introduction to the main functionalities (quizzing, psychometrics, dramaturgy), followed by participants playing the game, ending with interviews and surveys with stakeholders (see Results of Surveys).

County health care workers
The health care workers mostly liked the ability the gaming platform allows to play directly with your peers as well as the jackpot feature that allows for gamified learning. A key motivational factor that the health workers identified that would encourage continuous gaming and therefore continuous learning, was to have the game linked to a certification/reward system. One of the main applications they saw for the platform is to educate adolescents on various topics such as prevention of NCDs, HIV and building healthy systems via adolescent champions already stationed in the counties.

BSc. Computer Science students
Like the county health care workers, the friendly competition encouraged by the jackpot feature as well as the ability to directly play with their peers, was the most liked element of the game by the bachelor students. They saw application of the gaming platform in complementing existing course work as a method of learning including several topic areas such as social science, computer programming and public health information.

PhD students
Having more of a research background the PhD students liked the design of the interface of yeepa the most, and were particularly interested in the potential of the reach and extent of the social impact the game could have.

Faculty of the School of Computing and Informatics, University of Nairobi
A meeting with the faculty was attended also by the Director of the School, Dr. Agnes Wausi and Prof. Wagacha Peter Waiganjo discussing gamification of education and also having a joint live game. Further cooperation opportunities between UoN and HealthGames Kenya were explored.

Private sector organizations
The scope of the platform in harvesting big data and performing analytics as well the user friendliness and ability to easily integrate the game in existing capacity building programs interested the organizations the most. They saw potential of the game in professional development to measure competency levels of staff members.

Whilst each of the target audiences had interests in distinct components of the gaming platform, there were several key findings that were common across all groups:

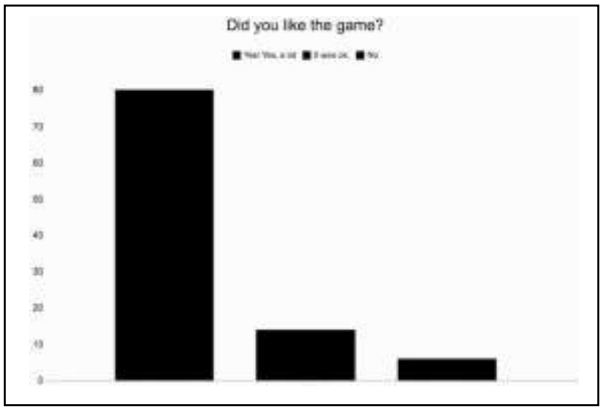
I. Majority would play the game to enhance their knowledge and professional skills
II. Majority liked the competitive element of gaming with colleagues and other students the most
III. Majority identified a reward system as a key motivator to ensure continuous gaming and learning

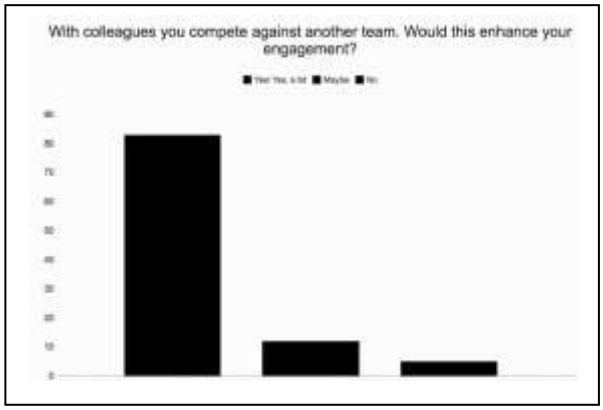
IV. Majority highlighted access to internet as a key challenge for implementation in local settings
V. Majority listed applicability in various sectors including: health, education, and several private sectors e.g. insurance, telecommunications, pharmaceuticals etc.

8. Results of Surveys

Main results of surveys and interviews based on 100 participants of workshops and meetings during the HealthGames Kenya consultation phase in Nairobi from 22nd May to 31st May 2017:

- 80% of the gamers liked the games
- For 80% of gamers competition between teams enhances their engagement
- For 80% of gamers the score stimulates for more learning
- 90% of gamers would play the games for knowledge enhancement





9. Shared Values and Obstacles

The Value Proposition

Capacity building in Africa comes along with huge costs, insufficient reach and an impact on knowledge that has never been measured. The only measured impact of capacity building is the added "per diem" to the wages of privileged participants, making it very attractive to spend time away from the workplace.

Contrary to that pointed statement, HealthGames Kenya is a scalable mobile learning and analytics service that stimulates self-organized learning and individual coaching through the handheld devices of the learners - wherever they are located.

Measuring impact on knowledge development is embedded in the games as a real-time function. When linked to ongoing training programs, then the games become a formative quality assurance tool with real-time feed back on quantified impact.

HealthGames Kenya provides anonymized collective analytics about efficacy as a service for capacity building providers for interventions based on facts. This results in a high degree of accountability and transparency and will have a significant positive impact on costs and quality of educational and training systems.

During the consultation phase the major obstacle for the implemantation of HealthGames Kenya was identified as Internet availability and pricing, as well as costs of smartphones.

HealthGames Kenya has the aim to become the preferred learning platform for massive engaging health literacy development. For such an aim network coverage and affordability must be obtained also for those Millions of Kenyans not yet using a smartphone.

For the time being however, the ever growing millions of people who do use the mobile Internet are a fair justification to start with mobile educational programs right now.

This is even more true when considering three significant barriers to Internet adoption in the region, which are seen in the lack of

- awareness,
- locally relevant content,
- and digital skills.[4]

With its awareness building capacity, highly relevant local content and support of digital skills HealthGames Kenya is a key enabler for overcoming these barriers.

One should however also consider the tremendous progress being made in Kenya over the last years. Mobile penetration has reached now over 90% in the country. There is a financial inclusion rate of about 80%, thanks also to the worldwide acclaimed mobile banking system. The percentage of people using a smartphone to access the Internet has increased from 27% in 2014 to 44% in 2016. According to the Google Consumer Barometer 2017, about 44% or 21 Million of all Kenyans use a smartphone today.[5]

Asian mobile phone brands have become key with a great product diversity and drastic decreases of prices. From 2013 to 2016 the average price of smartphones has fallen in Kenya from 200$ down to 100$ and currently some smartphones with prices of below 50$ are entering the marketplace. This

[4] Connected Society. Consumer barriers to mobile internet adoption in Africa

[5] https://www.consumerbarometer.com

price development over the last years indicate that smartphones will soon become the communication device of an entire population, ready to be used for applications in all sectors of society.

The dynamics of the Kenyan economy will affect and minimize current obstacles related to network coverage and affordability in a relatively short period of time. With a projected average GDP growth of 6,5% over the next three years Kenya has the third fastest growing economy in the world. It is clear however that for achieving consumer friendly Internet costs it will need additional efforts from the regulatory bodies and the mobile service providers.

In any case: HealthGames Kenya as an educational service will arrange for special educational rates and access schemes that will make a massive operation feasible already by 2018 and beyond.

The consultations in May 2017 made obstacles transparent and allowed at the same time also for exploring in a realistic way the feasibility and market opportunities for mobile game based health education across a variety of organizations and industries.

As next steps, the HealthGames Kenya team is following up on expressions of interest from more than 10 corporations and organizations for applying the gaming concept to better achieve their objectives.

10. List of Participating Institutions

Institutions and corporations participating with more than 100 representatives in the workshops and meetings during the HealthGames Kenya consultation phase in Nairobi from 22nd May to 31st May 2017.

Name of Institution	Type of Institution
World Health Organization	United Nations Agency
Pharmacy and Poisons Board	Kenya Drug Regulartory Authority
AMREF	International Development Organization
GIZ	International Development Organization
University of Nairobi	University
The Co-operative University of Kenya	University
The University of East Africa	University
Kenyatta University	University
African Virtual University	University
Humboldt University Berlin	University
Gamelab.berlin	Innovation Centre
Surfhero UG	Start up
Merck	Pharmaceutical Company
Bayer	Pharmaceutical Company
Novartis	Pharmaceutical Company
Boehringer Ingelheim	Pharmaceutical Company
DGRV	Cooperative Association Germany
CAK	Cooperative Alliance of Kenya
Safaricom	Mobile Services
Medic Mobile	Mobile Healthcare Apps NGO
SNTL Publishing	Software Company
John Snow Inc.	Public Health Services
UAP Old Mutual	Insurances
Feel Fitness	Healthcare Services
SOS Children's Villages International	International Development Organization
KEMRI	Kenya Medical Research Institute
Asumbi Treatment Centre	Public Healthcare service
Young Professionals Chronic Disease Network	Public Healthcare NGO

11. Comments of Workshop Participants

Dr. Hellen Amunga, The East African University, Nairobi:
"In Kenya we are aware about the high relevance of using eLearning for our educational system. We provide already an educational cloud and tablets and computers to our schools. But what is lacking are smart applications, such as HealthGames Kenya. Multiplaying is important from a motivational point of view. Obviously mobile is the way to go nowadays. But I was most impressed by the psychometric measurement function of the platform, that gives students, teachers, educators and also the Ministry finally an honest feedback on impact."

Monica Chege, Safaricom, Mombasa:
"I was amazed realizing the many different target groups and burning issues a mobile multiplaying Quiz platform such as in use with HealthGames Kenya could address - with a real impact I have not seen before. With my background in mobile banking I am aware about the issues of money laundering and fraud in the field. We need these kind of motivating learning games on the mobiles of our agents!".

Frank Bemmerlein, German Cooperative Confederation, Nairobi
„I am supporting capacity building in the Kenyan agricultural cooperatives. Cooperatives here employ directly and indirectly more than 2 Million people and control about 50% of Kenya's GDP. Despite the fact that network problems are the most severe in rural regions, the farmers are looking for ways to apply advanced mobile communication technologies to foster their business and to participate in online professional further training programs. Time pressure, the distances and poor educational infrastructure up-country allow for no other option than to find network solutions. The Kenyan national association of cooperatives (CAK) has just recently adopted a policy for every cooperative to provide a fixed percentage to be spent on capacity building. With the support of the German Cooperative Confederation (DGRV), we initiated therefore the first online knowledge game on „Leadership in Cooperatives“ in September 2017, addressing especially farm cooperatives. HealthGames Kenya will be obviously also very important for our farmers. We are wishing HealthGames Kenya all the best and hope to be able to join the games soon from our up-country dairy cooperatives hot spots.“

Dr. Mellany Murgor, The Young Professional Chronic Disease Network, Nairobi:
„ I am the Africa Director for 'The Young Professional Chronic Disease Network' in Kenya. We are conveners, influencers, and mobilizers in the fight against NCDs with a proven track record locally, regionally and even globally. In keeping up with the emerging trends, we need to find new ways to extend our reach, new ways to engage those we reach in a more profound way if more impact is to be realized. HealthGames Kenya is an exciting opportunity that can reach out to the millions of mobile device users. The competitive gaming approach can engage and motivate people of all ages while their learning is monitored and evaluated. All this combined will increase the impact of health literacy campaigns in Africa significantly."

12. Frequently asked Questions

1. How ready is Kenya for an online service like the mobile multiplaying *HealthGames*?

In 2017 81% or 39 Million of the 48 Million Kenyans use the Internet in one way or another, be it at home, at work, or in the Internet Cafés. 40% of all Kenyans access the Internet daily, 44% or 21 Million of all Kenyans use a smartphone. On this basis the Internet in Kenya provides already an excellent communication channel that allows a mobile interactive engagement with millions of people second to none. There are still large areas in Kenya not sufficiently covered by the networks, half of the pulation can not afford a smartphone and Internet prices are not yet consumer friendly enough. But with improving networks and foreseen decreasing prices and already millions of Kenyans accessible, it is the right time now to offer innovative and engaging applications such as HealthGames Kenya.[6]

2. Learners need to be online while playing, what about their costs?

For the gamers a number of "Free Play and Learn" options will be provided, such as an educational flatrate combined with a "Bundles for Learning" reward system. Once a learning/gaming aim is achieved, indicated through the gamer's score, the learners mobile gets automatically charged with bundles for the next rounds. By this gamers are rewarded by achieving sets of learning goals and not by formally attending a training.

3. What are the overall costs of organizing Health Games?

Currently capacity building in Africa comes a long with huge costs, insufficient reach and an impact that has never been measured. Contrary to this HealthGames Kenya will provide a highly scalable gamified online learning environment with embedded analytics for better coaching the learners and for impact assessments.

Costs of running the gaming platform depend on the number of learners engaged and sum up to the costs of a book per learner per year. Total costs of a projects depend on the number of gamers and the overall game dramaturgy, e.g. with accompanying measures such as face-to-face events, prizes for winners, and lenght of the project.

4. What will be the impact of *HealthGames Kenya*?

As stated at the GIZ Lab of tomorrow workshop on 2 March 2017, HealthGames Kenya will have:

- a measured improvement of a healthy life style with the target groups engaged
- and provide formative valid and relevant data on health literacy development for interventions based on facts.

[6] www.internetworldstats.com , https://www.consumerbarometer.com