



A Serious Game for Health Prevention
Campaigns on Teenage Pregnancy - Experiences
from Ghana.

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A serious game for health prevention campaigns on teenage pregnancy - experiences from Ghana.

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Abstract. As in many West African countries also in Ghana there is a high rate of teenage pregnancy, which creates great political concern. This problem found major attention in the context of the FACIL-ICT project¹ conducted by the University of Siegen, Germany in collaboration with two Ghanaian districts (Nsawam Adoagyiri and Suhum). In order to curb the high rate of teenage pregnancy, a game titled “Amanda’s story” was developed to test the use of a serious game for health prevention campaigns on teenage pregnancy in Ghana. Below is an image of the main menu of Amanda's story illustrated in figure 1.

¹ <https://www.facil-ict.com>

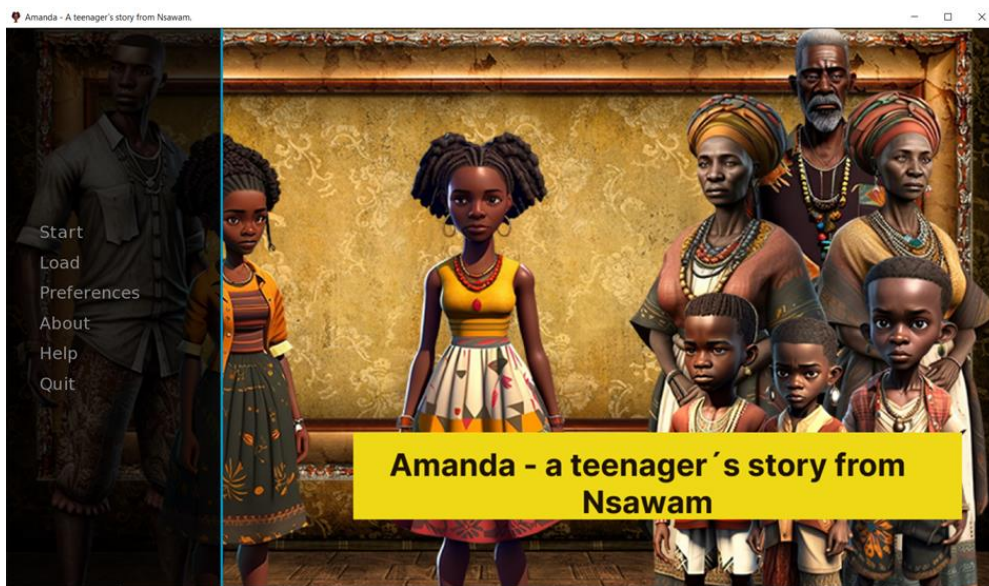


Figure 1: Main menu of the Amanda's story

1 Introduction

In developing nations, around 12 million teenagers between the ages of 15 and 19 years get pregnant each year and give birth to an estimated 21 million babies (Ghana | Data, 2021). This is often caused by factors such as poverty, lack of information on sexual rights and family planning methods, inappropriate use of contraceptives among others (Toolkit - Adolescents, SRH, SGBV, 2018). The negative effects of teenage pregnancy does not only affect the mother's health, but also the child, society and the economy at large. Teenage pregnancy is a term used to describe pregnancies that occur in girls aged 19 years or younger (Toolkit - Adolescents, SRH, SGBV, 2018).

A study conducted by the Ghana Health Service District Health Information Management Health System (DHIMS) between 2016 and 2020 showed that there were 13,444 pregnancies among early adolescents aged 10 to 14 and 542,131 pregnancies among girls aged 15 to 19 years (Adolescent Pregnancy in Ghanaian Communities – A Worrying Trend Amid MTCT of HIV, 2022). The number of teenage pregnancy cases in Ghana are unevenly distributed across its 16 regions. Between 2016 and 2020, the Ashanti region recorded the highest number with 2,165 cases of teenage pregnancies. This was followed by the Eastern region recording 1,528 cases (Teenage Pregnancies in Ghana Hit 555,575 in Five Years, 2021). This paper is based on a study conducted in Nsawam-Adoagyiri and Suhum districts, both located in the Eastern region of Ghana, where the rate of teenage pregnancy is prevalent. The Republic of Ghana is an independent nation with a population of approximately 32 million people as at 2021 (Ghana | Data, 2021).

Ghana is a country in West Africa that borders Burkina Faso to the north, the Republic of Togo to the east, La Côte D'Ivoire to the west, and the Gulf of Guinea to the south. The population of the nation is primarily young; as of 2010, 38.3 percent of people were under the age of 15 years. Adolescents make up one in five people (22.4%), which is a sizable portion of the overall population. Once more, 62 percent of Ghana's population is under the age of 25 years. Therefore, it's crucial to look at concerns affecting teenagers and young adults (*Adolescent Pregnancy Strategic Plan_new.cdr*, 2017).

In view of these high occurrences of teenage pregnancy in the Facil-ICT-project regions, there was the suggestion to consider a serious game in the form of a visual novel titled “ Amanda’s story”. The visual novel was supposed to serve as a campaign tool that could be embedded in communication and preventive strategies for teenage pregnancy of the Nsawam-Adoagyiri and Suhum health offices. Serious games are games that aim at other positive goals besides entertainment (Shoukry et al., 2014). Serious games are used for education, health promotion, behavioral change etc.

This article starts with the review of existing work that has been done in preventing teenage pregnancy in Ghana, followed by examples of how serious games have been implemented in the domain of healthcare for behavioral change. It also explains the method that was used to develop the novel, the plot and messages of the novel. Furthermore, it presents a reflection on the prototype of ‘Amanda’s story’ and the feedback from end users and other stakeholder groups. Summarizing it outlines some possible challenges and limitations of such an approach and recommendations for future research.

2 State of Art

While there have been many activities done by governments, individuals or Civil Society Organizations in educating adolescents and the public on Sexual Reproductive Health and Rights (SRHR), there are still many cases of early and unwanted early pregnancies. Various sub organizations of the United Nations in Ghana such as the United Nations Children’s Fund (UNICEF), United Nations Populations Fund (UNFPA) have been actively involved in such work. The Ministry of Gender in Ghana, in collaboration with UNFPA and the Ningo-Prampram District of the Greater Accra Region trained a number girls on sexual rights to curb the high rate of teenage pregnancy in the region and evaluated the results (*Adolescent Pregnancy in Ghanaian Communities – A Worrying Trend Amid MTCT of HIV*, 2022) .

Teenage pregnancy has effects on the health and well-being of mothers and children and also on psycho and socio-economic domains of their biographies. In order to reduce the high rate games have shown to have a positive impact in behavioral change and supported advocacy and awareness raising. E.g. (Vugts et

al., 2020) conducted a study on how well a serious game intervention worked for people with chronic pain or fatigue symptoms. The findings showed that such forms of gaming increased individuals' levels of physical activity, self-efficacy, and functional capacity.

In Ethiopia, a serious game was used to educate people who are illiterate and have little to no prior experience with digital games to educate healthy eating and wellbeing habits. Findings from this study showed that serious games are a great tool for education (Font et al., 2017).

Viamo is an international social enterprise that leverages mobile technology for social and behavioral change communication mostly in developing countries. Viamo in partnership with other organizations developed a Wanji game to drive behavioral change for finance, climate, and health behavior change in 20+ countries including Ghana. This Wangi game allows players to make their own choices to determine the story's outcome. It is accessible to players for free in different languages. Evaluation results indicated that players learn more about varieties of topics by choosing endings of the story (*Award-Winning Edutainment Game Drives Behavior Change in Over 20 Countries*, 2022).

UNICEF, UNFPA in collaboration with other partners in Ghana developed a board game for raising awareness about adolescent sexual and reproductive health, sexual and gender-based violence (SGBV), including challenges adolescents face such as teenage pregnancy, where they can seek information and support. This board game is called “the protection snake and ladder game”. This game is presented in different color patterns. It can be played by four people or four small teams. It is designed to be played with adolescents but it could also be adjusted to be played with adults (*Toolkit - Adolescents, SRH, SGBV*, 2018).

Beyond such approaches there has been an intense use of analogue content such as posters, leaflets, brochures or videos for media campaigns on teenage pregnancy . However, there is no systematic reflection or research on how visual novels can be used for preventive measures in teenage pregnancy campaigns in Ghana.

3 Methodology- steps to realization

During this study information was to be collected on local situations and life conditions of young people, support services and health agencies. This information had to be transferred into a script. The next step was exploring existing technology and software that best suit requests for prototype development. In developing the novel, Amanda's story, a participatory design approach was used which involved stakeholders throughout the research phase. These stakeholders included researchers, end users/community, health practitioners, social welfare officers, CSOs, and stakeholders from the municipalities. There were a number of meetings and workshops held in-person, virtual and hybrid. This procedure was divided into

three main phases of pre-design, design; technical development and prototyping, testing and implementation.

Pre-design

Design thinking methods of design were used where researchers from Siegen university and stakeholders from Ghana participated in a hybrid meeting. This was a two-day workshop where participants began with the step of understanding the problem of the high rate of teenage pregnancy in the districts. This was based on a presentation from a health officer from one of the Ghanaian districts, followed by ideation, where participants brainstormed possible solutions that could be helpful in solving such a problem. They rated the use of visual novels as a tool that could be embedded in a campaign of health promotion. The team prototyped this visual novel in PowerPoint slides.

Amanda's story – Developing plot and messages

“Amanda's story” was developed to be a gamified information video that follows a virtual female youngster of 16 years, on her various steps from having sex with “Mark” her former neighbor, to being afraid of being pregnant, to communicating within the family and making the decision on how to go on, while involving the potential father Mark. The key idea is to provide reliable information on every step of the script. This information involves both medical and social content that is mostly taken from the well-respected Marie Stopes Ghana². It also comprehends addresses of municipal services and counseling agencies of CSOs in Nsawam-Adoagyiri and Suhum and other local contact points that might be helpful.

Normative messages of the novel

It was necessary to reflect on the normative messages of the plot. The novel includes information on current preventive measures and practices available in the districts, like sex education to parents and their wards through, Radio and Television health talks, ward education and ANC/PNC visits sharing of maternal and child health records booklets to pregnant mothers, formation of Adolescent Health Corners in the various health facilities in the districts, School Health Services, and the provision or offering of modern family planning commodities. Furthermore, it also communicates the two possible decisions that a young pregnant woman like Amanda will be confronted with in such a situation. These two possible decisions are either becoming a young mother or going in for safe abortion. This can become a challenging decision for a female teenager and other people involved, also the potential father and his responsibilities. The novel includes possible

²<https://www.maristopes.org.gh>

questions to consider when making any of these decisions. For example, when deciding for motherhood, one could think of questions like; “Would I raise the child myself?”, etc..

Design; technical development and prototyping

There was a further elaboration of “Amanda’s story” with a typical local setting. A further step was taken into the technical design and development with a higher fidelity prototype using Twine³, a software for developing visual novels. This was iterated a couple of times and a more professional version of this was developed using Renpy⁴, another tool for developing visual novels. As a result, the novel can be played both online and offline thus with or without internet connection. It can be accessed on Windows, Android and MacOS. It is also compatible with devices such as smartphones, laptops and tablets.

Testing and implementation phase

An in-person workshop was held in Ghana in April 2023 where a semi-final version of Amanda's story was tested and discussed with end users. The prototype was also evaluated with professionals from health, social welfare, civil society organizations and young people from the districts. A concept for a local prevention campaign was developed in which the visual novel could be embedded in the communication strategies of the municipalities.

4 Reflections and further research needs

During the testing phase of the prototype of Amanda's story, participants of the workshop including end users provided important feedback which emphasized the necessity of considering the social context of users when designing any socio-technical solutions like Amanda's story. Such feedbacks were referring to the cultural and social norm of design, e.g., a character named Mark, the man who impregnated Amanda at the wedding party was initially created with his hands in his pocket. During the testing of the prototype with the end users they indicated that it was not culturally accepted for Mark to have his hands in his pocket while speaking to the parents of Amanda as this shows a sign of disrespect. They further indicated that this could influence the player’s perception. Based on this feedback, Mark was recreated with his hands outside of his pocket in the current version of the novel.

³ <https://twinery.org/>

⁴ <https://www.renpy.org/>

In addition, users emphasized the importance of making the novel audio-visual. Therefore, it was decided to incorporate an audio in English and another audio option in “Twi” - the local language popularly spoken in Nsawam-Adoagyiri and Suhum - into the novel to promote inclusion. This was to enable persons with low-literacy backgrounds and different forms of sensory impairments such as hearing and sight to use this novel.

5 Discussion

The whole novel conveys several relevant information and recommendations to teenagers as its primary target group but also to parents, teachers, health and welfare professionals and other community members. In Ghana, most parents hesitate to explicitly educate their children on adolescent sexual reproductive health. This is due to traditional beliefs including the myths and misconception that when adolescents learn about this topic, they are likely to indulge in sexual intercourse at early ages. This sometimes makes the topic around adolescent sexual reproductive health a sensitive one.

On the other hand, teenagers are sometimes shy to ask their parents and professionals about this topic. While some of them lack the knowledge on where to find the right answers to this topic. They rather ask their peers, friends, and watch unapproved content online. However, information from these sources can sometimes be false and misleading.

The novel includes information on measures to prevent pregnancy, e.g. the use of contraceptives such as condoms, post pills, etc. are ways of preventing unwanted pregnancy and advise teenagers who indulge in unprotected sex. It teaches users that the use of contraceptives is not the task of just one partner but both partners involved in the sexual activity. This shows that gender stereotypes cannot be accepted when it comes to who takes responsibility. A text in the game " should contraceptives have been Amanda's task or mine task" illustrates thoughts of Mark after making love to Amanda.

Integration of female youngsters’ experiences teenage pregnancy into school or learning a trade

The story further advocates for support systems for early mothers who may become young mothers by reintegration into society by continuing their education or learning a trade. This is clearly outlined in the game where Amanda informed Mark and her family about her decision to become a mother. Amanda said “I said, I want to have the baby! I presented a suggestion on how I could have it and still finish school or learn a trade”. This message of integrating young mothers back into school falls in line with the “Objective 3 of the National Strategic Framework on Ending Child Marriage in Ghana 2017-2026 with the key strategy to support

adolescent mothers' re-entry in school after delivery" (*Toolkit - Adolescents, SRH, SGBV*, 2018).

The advocacy for protected sex and safeguarding against sexually transmitted diseases.

Also, this novel promotes awareness for safe sex. It emphasizes the fact that protected sex does not only prevent unwanted pregnancies but also protects partners against sexually transmitted diseases (STDs) such as HIV/Aids. The appropriate use of condoms can reduce the risks of transmitting STDs during sexual intercourse (*Adolescent Pregnancy Strategic Plan_new.cdr*, 2017). The novel also strengthens the capacity of the players on how to use condoms by directing them to a website of Marie Stopes which shows how condoms can be properly used. This was illustrated in the novel as an advice: "Amanda and Mark, you must be careful when you make love! Think of contraceptives for e.g., condoms that can prevent pregnancy and also protect you against sexually transmitted diseases for e.g., HIV/ AIDS, Syphilis, etc.! REMEMBER: IF IT'S NOT ON, IT'S NOT IN !!!"

The advocacy for safe abortion

According to (*Adolescent Pregnancy Strategic Plan_new.cdr*, 2017) young teenage girls indulge in unsafe abortion practices due to reasons such as poverty, stigmatization from the public, early motherhood, etc. Again, Post-abortion complications continue to be a problem because many abortion cases are performed outside of medical facilities by untrained staff. This sometimes complicates their health resulting in cases of death, diseases, excess bleeding, etc. The novel outlines safe spaces and professionals who can support and provide safe abortion for example hospitals, clinics, Marie Stopes, a recognized organization for performing safe abortion among others.

Promoting safe spaces for victims of teenage pregnancy

The novel promotes seeking advice from safe spaces and experts who can help anyone in such a situation. For example, it lays emphasis on the role of the social welfare officer, health officer and Civil Society Organizations like Marie Stopes which offer support to young people who find themselves in such a situation like Amanda or may want to learn more about safe sex.

6. Challenges and limitations

Although this novel has insightful lessons for users and different stakeholder groups it is likely to have some limitations and challenges as outlined in this

chapter. The novel was developed in English, the official language in Ghana and “Twi”, the most popular local language spoken and understood by most people in these two districts. However, there could be a population of this target group who can neither understand English or Twi.

Due to the participatory method design it was possible to observe that different stakeholder groups, consisting mainly of adult males, had conflicting perspectives of the messages of the novel. On that basis, a fruitful discussion could be initiated that supported reflections on traditional attitudes to deal with teenage pregnancy such as early marriages.

There are a variety of ways in which this novel could be used e.g., in classrooms. It is suggested that this novel will be adopted as part of campaigns by government authorities. However, some key messages in the visual novel may be in conflict with the thoughts of some users. We believe this is a liberal concept of sexuality that is assumed not to be shared by everyone.

7. Conclusion

This novel provides the option to be embedded in the national framework for communication and preventive strategies for teenage pregnancy. It could be translated into other major local languages for use. At this point the material is for a non-commercial use which means it is not meant to be sold or exchanged for anything in cash or kind. It is meant for a wide use of stakeholders and users.

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