Pinnovation Gamification “Educational game Ashti”

People in Need

Project background/intro:

The project's goal; to introduce a supervised, cooperative, and interactive learning environment that encourages students to be actively involved in developing sustainable practices in climate change.

Following approval of Gamification January 2022, the game's development was assigned to Charles Games, a Czech company based in Prague, with which PIN had already collaborated with. We ensured the involvement of local actors and end-users in the design of the game by organizing bilateral meetings with Kurdistan Ministry of Education officials, teachers, headmasters and students from the target schools.

This was in order to illustrate the progress in the development of the game and to gather feedback to be brought back to the developers. PIN's Climate Change and Education Advisers have also supported the company with technical expertise. The game was translated into Kurdish and Arabic in order to be inclusive in the two main languages of the children in the targeted schools (with mixed local, IDPs and refugee children).

Due to the translation to Kurdish being more complicated than expected, the project timeline was stretched, with translation and related game enhancements taking over the months of fall/winter 2022. This delay, unfortunately, led to delays in the piloting of the game until February 2023. The pilot was conducted under Education Cannot Wait project in Shaqlawa - Basrma Camp, Rozhava Basic, and Secondary Schools. It was made accessible to the school through tablets provided within the projects scope.

The interactive application teaches children about real time, environmental challenges In Iraq and encourages children both individually and in groups to gain practical experience combat and mitigate the impact of climate change in their communities. Alongside support children to develop their fundamental skills through activities that involve literacy and critical thinking.

The game itself has two phases. While the first one focuses more on the water management theory and educates children on various possibilities of water preservation, the second lets students interactively implement measures to mitigate issues learned about in the previous phase.

The offline part consists of homework, discussions, brainstorming and focus group discussions that provide children with a broader understanding of water conservation in the local context. Importantly, these features allow the students to analyse the conditions of water preservation in their communities. Bringing the topic to everyday life through game-led and fun activities is an excellent way to ensure their responsiveness to climate change's consequences.

Brief on the Methodology of Evidence:

The feedback survey, pre/post-test and FGDs were conducted in the schools targeted under this pilot to measure the game's impact. A feedback survey was conducted in February 2023 to understand the initial children's reactions to gamification.

To measure the immediate impact of the game on children's knowledge and behaviour, pre/post-test was conducted upon first encounter with the game, and FGDs were conducted within 3 weeks of the first encounter with the game.

Project Design:

Two main problems were identified based on PINs longterm programming in Iraq and assessments. Firstly, the local population faces climate change, as Iraq is one of the most vulnerable countries to its affects. Climate change impacts are further compounded by the transboundary water governance and misinformed management of natural resources, leading to adverse effects on Iraqi farmers, most noticeable in sustaining livelihood production. Serious dialogue between government, academia and civil society on the impacts of climate change and measures to adapt to it is hardly taking place. Awareness among the population regarding climate change needs to be higher. There needs to be more public information, knowledge, and research on climate-smart action that actively engages the population[1]. Such observations have been verified through two internal Gender and Inclusive Climate-migration studies (July 2022 and October 2022) funded through the Global Investment Fund (GIF) and ongoing and forecasted education projects.

The second problem addressed in this project is Iraq's low learning outcomes. Having one of the lowest results in MENA region, Iraq needs more adequate resources including safe learning spaces, teachers, textbooks and sector reforms. The ineffectiveness of the education system in Iraq poses obstacles to the potential development of human capital and of the country (World Bank, 2021i). Therefore, in addition to environmental education as such, the project recognizes how important it is for the education sector to keep pace with IT innovations and technology developments and for children to familiarise themselves with technology as a means to widen their livelihood opportunities and improve their lives.

The lack of education on climate change, its impact on everyday life and the nonexistence of proper and widely distributed teaching tools, which would reflect the specifics of life in Iraqi Kurdistan, was deemed a core problem related to climate education. To cover the gap and to enable teaching children about sustainable behaviour and a sustainable future for the community, the PINNOVATION funding was used to create an educational game dedicated to water management in local communities.

The intervention was based on the presumption that if a stable and safe learning environment is created (through ECW funding) and efficient and interactive teaching tools exist, children will be motivated to learn and participate in educational activities. Repetitive implementation of games, accompanied by offline activities and homework, will further enhance learning outcomes by incorporating new and sustainable activities into children's day to day life.

The selected intervention aimed to mainstream environmental education appealingly and interactively for children in basic and secondary schools. The project aimed at creating a tool that would be easy to use and at the same time will be compact enough not to disturb the official curriculum. From a long-term perspective the overall goal is sensitive the community and especially youth/future generations and to teach them how to take on responsibility for their own behavior.

Game design

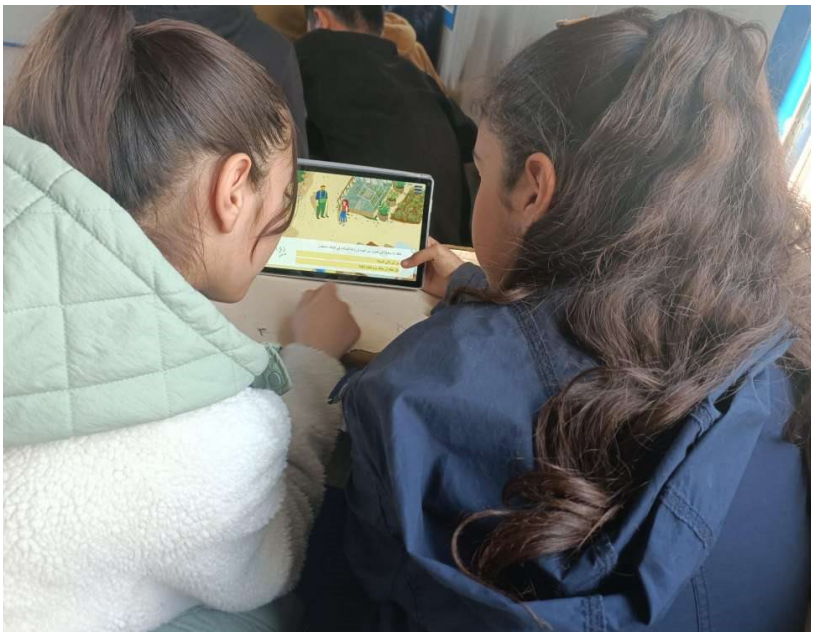
The game itself has two phases, played by children during two days sessions. While the first one focuses more on the water management theory and educates children on various possibilities of water preservation, the second one lets students interactively implement measures learned in the previous phase. Regarding learning outcomes, the first part is supported by Notes Taking sheet to write down information learnt, which can help them not only during the second part of the game, but with finishing the homework as well. Second part is testing children's critical thinking and numeracy skills, as they are provided with a “budget” and list of measures to improve water management in their community.

The offline part consists of homework, discussion, brainstorming and focus group discussion, providing children with a broader understanding of the issue in the local context. Importantly, these features allow the students to analyse the conditions of water preservation in communities. Bringing the topic to everyday life through game-led and fun activities is an excellent way how to ensure their raising responsiveness to the consequences of climate change

[1] https://elbarlament.org/projects/iraq-thinks-ahead/

Project Impact

The general objective of the project was to raise awareness on environmental issues and to introduce the topic of climate change. The main result of this project was to create an impactful learning experience, which will be perceived as beneficial by PIN, Iraqi CP and local authorities. All of these goals were successfully fulfilled. Despite the problems with translation to Kurdish dialect Sorani, the game was developed as anticipated, reflecting all inputs from local authorities and experts. Being in touch with the KRI MoE during the whole project ensured governmental support not only during PIN implementation, but we were able to engage the government as a proactive actor for future Kurdistan-wide implementation.



As the results of initial children's feedback (shared with HQ) and Impact report (annex to this Learning brief) show, the gamification intervention positively impacted children's knowledge and engagement. Not only were children proactive during the educational sessions, but they were coming up with suggestions for the future development of the game and its related activities. Many were asking repetition of planned activities, and the impact reports confirm an increase in awareness and learning (please see below). This proof initial assumptions built on a survey conducted by UNEP[2]on the potential positive impact of the videogames industry on environmental education were correct. The UNEP survey highlights that most videogames leaders believe that games can successfully raise awareness for a cause (96%), assist awareness and learning (84%) and drive positive behavioural change (76%).

Impact of the game

As for the changes on the individual level, we are already witnessing some dedication displayed in children's behaviour, which is further described in PINNOVATION Impact Report, an annexe to this Learning Brief. Many participants shared stories of how they have started to save and reduce their water use, and how their practices have changed after the activity. For instance, one student mentioned that they used to keep the sink running while brushing their teeth or washing their face, but now they turn it off to save more water. The impact of the activity was perceived as very positive by many students.

During the focus group discussions (FGDs), a significant proportion (approximately 5 to 7 members) of each group reported sharing personal anecdotes about the beneficial effects of the activity, citing changes in their behaviors and increased knowledge-sharing with their acquaintances.

From a quantitative point of view, 84% of the participants showed an increase in their knowledge of saving water and climate change, resulting in an average score of 17% improvement. According to the pre/post-test data, the female primary school showed a 23% improvement, while the female secondary school showed a 10% improvement. As for male students, both primary and secondary showed a 16% improvement.

The intervention had great impact on children's understanding of water management within the community, as we witnessed more than 20% improvement in questions on groundwater (from 9 to 25.5 points), benefits of rainwater (21 to 33,5 points), reusing water (33 to 46 points) or on factories water management (33 to 59 points). What we deem as an important result is 13% improvement (21 to 29 points) in understanding who is responsible for water saving and thus minimising water waste in their communities and homes.

[2]Playing for the Planet: How Videogames can Deliver for People and for the Environment, UNEP 2019; https://www.unep.org/news-and-stories/story/playing-planet-how-video-games-can-deliver-environment

The lowest improvement of 5% per each question was noticed in the questions dedicated to reasons causing water shortage, the greening aspect and projects that save and conserve water. Low scores regarding the greening aspects (importance of trees in the area) and the existence of wells in the area can be explained by already high initial knowledge among children during the pre-test.

The assessment found that the question on projects that save and conserve water had a low pre- and post-test score. The impact report shows us that we need to dedicate more time to explaining topics to children and that they need to get in touch with the game, especially its second part, more intensively and often than during the pilot.

Feedback Survey

As shared with HQ, the Ashti game received mainly positive feedback (95%), the problem-solving aspect of the game was highlighted above all as directly mentioned by 36,36% of responders. Regarding proposed water-saving improvements, there was no objection against them and at the same time, almost 73% of students reported some improvements being already implemented in their village/city. Almost 36% of children had minor negative comments about the game; however, only one student disliked it in general. From the rest of the responses, four children reported time-related issues, from the game being too short to not having enough time to understand and finish the game. Two students didn't like to the names neither of the main or the other characters.

In conclusion, the feedback provided PIN with recommendations for better structure of the lessons and possible future thematic development, as students mentioned they would like to try water management on farm level or garbage management in the village. Studies find that gamification leads to increments in sustainability knowledge. Nevertheless, such knowledge does not mean an increment in pro-environmental behaviour. Thus, in the pending PINNOVATION application for 2023, the game will be further enhanced, based on feedback, alongside further offline activities planned for both pending MFA 2023 and for the game to continue and expand across 4 ECW schools in (2023 and 2024) to strengthen the impact of environmental education.

Feedback from other actors

The game itself gained significant feedback not only from children but government officials and other NGOs as well. Regional Kurdistan Government appreciates PIN's innovative education approach and welcomes alternative teaching tools. To underline their support, KRI government requested further cooperation, which would be to disseminate the game across schools in Iraqi Kurdistan. The Licence agreement is currently being discussed to cover the legal aspects of such action. The KRI government is willing to partly fund the development of the game for iOS operating system. This cooperation will enable the PINNOVATION project to impact students' lives and educational experiences in the following years.

The introduction of gamification during the Monthly Sector Coordination Meeting was also well-received among participating NGOs, which showed a keen interest in this activity. This innovative approach has raised several pertinent questions regarding game design, target groups, and implementation, leading to a productive discussion with governmental officials. Following the discussion, the Kurdistan government has committed to creating "Awareness Days" and integrating them into the curriculum. This commitment allows us to carry out these activities without resistance from teachers and school directors, who are often concerned about time constraints. Implementing these Awareness Days will broaden the impact and promote environmental awareness among students in Kurdistan. We are optimistic about this development and look forward to working with the government to ensure the successful implementation of these educational initiatives. Several NGOs have expressed an interest in the gamification and Ashti educational project and have requested capacity development training from PIN. In response, we will collaborate with the government to reach out to these NGOs and provide them with the necessary support to implement these activities.

Our team is dedicated to working closely with them to ensure the implementation is successful and our shared goals are achieved.

We are confident that with our collective efforts and expertise, we can positively impact climate change education in Iraqi Kurdistan and possibly even Iraq. The support and interest from the KRI government and other NGOs further underscore the importance and relevance of this initiative.

Lessons learned

Regarding the lessons learned within the **educational sector**, we arrived to the following observations during implementation:

- To play the game in front of the kids before they start to become familiar with the phases, it should be on a large screen.
- Kids prefer to play in groups rather than alone, and they prefer the actual game to the theoretical part, so it is advisable to avoid doing it during school hours and to create a decent environment for it.
- For inspiration and to reward the player who achieves the highest score in the game, we could do something as simple as writing their name and giving them a sticker star.
- Regarading the literacy and numeracy, by targeting children of all ages and with difrent level of knowledge, no speicfic tasks aimed and literacy is part of the game. Nevertheless, numeracy and critical thinking are included in the second phase of the game. The game would have to be targeted on the specific age rage, so literacy and numeracy teaching would be efficient and age appropriate.

The key challenge we faced during the project was related to the game development process, specifically to translating the game into various language modifications. The lesson learned here is to dedicate more time to game development should the final product be translated into less mainstreamed language, as translating to the Kurdish language was both time and capacity-wise complicated.

Even though gamification reprezents an educational activity, the local curriculums often don't offer space for activities outside of their scope. PIN was able to overcome this obstacle by implementing the game during so-called student clubs, which our educational facilitators run. Nevertheless, these concerns were shared across other NGOs participating during the Monthly Sector Coordination Meeting in March. Following the successful pilot, the Kurdish Department of Education plans to make the gamification part of soon-to-be-established "Awareness days".

Final set of lessons is related to MEAL part of the project. During regular field visits, the following observations and recommendations were made and incorporated into the Lesson plan:

- At the start of the session, a repetitive explanation is required, especially for the pre/post-test questions with multiple correct answers.
- More time for filling out the pre and post-test is needed, especially regarding open-ended questions. Unfortunately, we were not able to allocate more time because of the limited time dedicated to school clubs.
- Time limitation prevented us from conducting longer debriefs after the game as well – such action would support learning outcomes.

It is necessary to add that the accompanying impact report measures impact only a few weeks after the initial exposure to the educational game. This is due to a delay caused by prolonged game translation to the Kurdish language. As the implementation beginning was postponed, the team needed more time to collect and analyse data reflecting behavioural change at this point.

Annexe

Annexe I: Feedback
Annexe II: Impact report
Annexe III: Lesson plans
Annexe IV: Water saving awareness
Annexe V: Homework