PORTFOLIO : BAFA (CBT City Builder)

GAMIFIED APP TO SUPPORT COGNITIVE BEHAVIOURAL THERAPY

Context

World

According to the World Drug Report, published in 2021, about 200 million people used cannabis in 2019. Cannabis use has risen by about 18 percent in the last ten years and despite a fourfold increase in the toxicity of cannabis products, around four times as many young people find cannabis to be safer. (WDR 2021: 10, 18).

Against this background, it is cautious that cannabis use for social and recreational purposes has fallen sharply over the last four decades. Cannabis is no longer used to experiment and integrate into society as much as to deal with various psychological problems. While previous social use was associated with a relatively low risk of long-term use, cannabis use for self-medication was associated with a significantly higher risk of developing dependence. (Patrick et al. 2019: 1)

Gunderson et al. A study of American schools published in 2020 found that counselors there found that cannabis was a key issue for young people in relieving school and family anxiety and stress. Counselors described this as self-medication and pointed out that this behavior was even more worrying than cannabis use as such. Combined with the attitude of young people that cannabis use is safe and a good solution in such situations and given the greater toxicity of cannabis products in the past, it is a major problem.

It is important to note that cannabis use has increased worldwide during the Covid-19 pandemic, and in this context the World Drug Report clearly highlights the growing need to fund both drug prevention and treatment, giving priority to cost-effective evidence-based preventive interventions (WDR I 2021: 14).

Estonia

25% of the Estonian adult population, i.e. every fourth adult, has used a narcotic substance during their lifetime (Vorobjov et al. 2019), most often cannabis and stimulants. Wastewater surveys also confirm that cannabis, amphetamines and cocaine are used the most (Abel-Ollo et al. 2021). MDMA and methamphetamine use have also increased dramatically. Until 2020, there was a non-personalized drug treatment database in Estonia, as a result of which there was no possibility to obtain a comprehensive overview of patients receiving drug treatment. It is estimated that there have been approximately 1,600 people a year treated for different types of drug use in rehab centres. Based on 2015

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data (there are no recent surveys) , there are an estimated 8,600 people injecting drugs in the 15–44 age group in Estonia.

It is clear that the need for cost-effective evidence-based interventions are needed also in Estonia and the discussion around preventive methods is a serious focus point. Mental health problems (depression, anxiety, trauma etc.) can be the leading causes for substance abuse and addiction, therefore tackling these issues could be the best approach. All the more so as substance abuse is often accompanied by other mental health risks. Dealing with seemingly not related mental health problems in rehab is a major part in everything from prevention to aftercare.

Problem

In our project, we were focusing on the last part, improving therapy adherence with a digital solution. We worked on creating a gamified app that can be used in the treatment of substance use disorders alongside traditional therapy methods (e.g. cognitive behavioural therapy). The concept for our phone application is a very simple yet catchy single-player gamified app. It would be a phone app, because that way the player could start playing it wherever and whenever they wish. They could play it, for example, whenever they feel a craving to use the substance or just to kill time when waiting for the bus. Though our main target audience are those who already attend therapy with their mental health problems, it can be played by anybody interested as a preventive or informative game.

Even though we started out from the idea that our target audience is people who abuse substances, we quickly realised that we need to have a more general support for therapy to have the best effect for the person seeking for help. Therefore we chose the most commonly used therapy, cognitive behavioral therapy(CBT), as our starting point. We have a strong belief that an intervention like this reduces the risk for relapse and helps a person in therapy to have better results. It is also making the therapy more cost-effective, as less regular check ups are needed. The player can track their progress at all times themselves.

Our team and stakeholders

Team members

Annika Välja, Psychology: Experience in human resources, project management, sales and non-profit organisations in Estonia. Studies in the field of Psychology with a special focus on clinical psychology, addiction behaviour and advertising psychology.

> *"Throughout the LIFE course, my role in this project was being a team leader. It was definitely not an easy task and there are many things I wish were done differently. I learned a lot and hopefully others as well. Our team worked together in spite of having very different backgrounds and our final concept is way beyond what I initially expected. Each member could contribute with something unique and helpful. There were moments where the team felt stuck and unmotivated, but it's part of the process and what's more important, is that we got over those slumps and delivered something meaningful. None of this would've been possible alone. I am truly excited about the future possibilities with this project!"*

> -Annika

Anokam Talbot Aristol, Politics and Governance: with a major in international relations and a minor in economics. He has experience in digital communication. Anokam is in charge of the storyline or plot line of the game.

Hanna-Liis Parts, Crossmedia: Experience in creative writing and storytelling, done multiple audiovisual projects.

> *"My part in this project has been focused on the graphics and overall design of the work as well as in idea development. Despite having our ups and downs, we have worked well together and managed to contribute in something I believe is truly useful and could help a lot of people. This project has taught me a lot and I can't wait to see how we can develop this further."*

> -Hanna-Liis

Prinsley Epie Hene, Politics and Governance: with a major in international relations, had background experience in finance for 2 and half years. Prinsley will be in charge of the game graphic design, that is drawing the game characters.

> *"I had several roles in the team. In context I was in charge of the game character development and carried out research necessary for the game development such as identifying phrase phrases to encourage someone going through CBT. My time stamp given to me was until the 29th of november to get my part of the work done so as to keep the project forward."*

> -Prinsley

Terry Minh Duc Pham-Huynh, Digital Learning Games. Art Director with 5 years of experience in fast-paced international agency environments specialized in creative and social campaigns. Terry was responsible for the game design and development of game mechanics into prototype via Unity engine

Stakeholders

Mikhail Fiadotau: Also a major player in our project because he served as the project evaluator. By having many years of experience in game design, Mikhail was very essential as our project advanced by giving tips and feedback from the game design -stage right till the prototype testing -stage of the game.

Janika Mavor: Her background in psychology, psychiatry and health care was instrumental in our project mainly through the various ways in which we managed to gain knowledge from her and her experience in working with cases related to mental health issues. She was also of great help in linking us with patients/clients for our first test and evaluation. She has also opted to help us organise a fundraiser for our project, if we wish to develop it beyond the beta stage.

People struggling with mental health problems: Gamification can attract more people to start and stay in therapy. As psychotherapy often takes place once a month (or in a serious case once a week), this may still not be enough to develop persistence. As therapy is very expensive, consuming a lot of time and effort, it's wise to grow already existing interventions' efficiency and this app is a perfect way to do that. People themselves are able to track their progress and get immediate help if they feel anxious, crave for a substance or struggle otherwise. The activity in the app will be saved for the user

Psychotherapists: Substance disorders are notoriously hard to overcome, since even when a treatment is effective, many patients later relapse. This is particularly difficult because addiction often manifests itself on both physiological and psychological levels; this is why effective treatment for substance use disorders often relies on a complex set of measures and interventions. Our idea for this game would be a great addition to therapy that would hopefully reduce the risk of relapse and enhance treatment. This would help therapists work more efficiently and the result of their work would be more rewarding.

Approach

It is evidently a comprehensive societal problem that clearly needs new, more effective solutions. Gamification involves the incorporation of electronic game elements into non-gaming contexts. Gamification and digital games have a potential to educate patients (Schoech et al. 2013; Stapinski et al. 2017), as it has the potential remedy to poor adherence with CBT and on the face of it the idea will have potential especial for young people as gaming is a new part of adolescence life (Christie et Al, 2019). A good example of this could be a game called Pain-Squad app-based pain diary that supports paediatric patients aged 9-18 through pain management programs. Using the game for anchoring behavioural patterns when the intermediate physical effects are taken care of. The project follows Agile project management.

Outcome

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Description of the concept

The game will not, nor is it supposed to, work alone as a solution to substance abuse. The game is there to support CBT (Cognitive Behavioral Therapy). It is meant to be used between sessions, its goal being to reduce the risk of relapse and to boost the effects of the therapy.

The game itself will consist of a ChatBOT feature and a city-building game. The ChatBOT is the most important part of the app, considering that it is the part that will mainly help people. They will focus on their moods and things they are grateful for, as well as analyze their thoughts and make plans and goals for the future. All these things are extremely helpful in the therapy, and will speed up the healing of the player. For answering these questions, the player will get rewards. These rewards come in the form of houses. With these houses, the player will be able to build their own city. This part of the game works as a motivator, challenging the player to write and analyze their thoughts more.

As of right now, we are still missing many details from the game. This is because we need to test the game on actual people to be able to make definite decisions on the details of the game.

How the app works

Our concept of this gamified app largely consists of two parts:

1. Chatbot that guides the player through cognitive behavioural exercises that help the player spot their cognitive distortions and change unhelpful thinking patterns. Each step is rewarded with building blocks

2. City/village building part of the game is visually pleasing. The player can build the city to their own liking, forming the minimalistic but colorful houses in a way that they see fit. With further developments, there is the possibility of the players being able to anonymously visit each other's villages and cities.

Design

As part of the LIFE project our team was focusing on the basic concept and due to limited resources and time, we didn't have the possibility to come up with a full description for the design. We concluded that this should be a focus point after the first testing phase to see how a user would start interacting and what would guide the player into a preferred direction (therapeutic support in a fun interactive way).

Check in

When logging in, the player will immediately get a house as a reward for showing up. This will motivate them further to go check in. During the check-in, the player will answer a simple question about their current mood. The exact options for the different moods the player can choose from has not yet been decided, as that decision will take some testing before it can be finalized.

After the player has played for a longer period of time (over one week), they will start getting updates on their weekly and monthly progress regarding their mood. The way these results will be shown is not yet clear, as that too will take some testing to be sure on the best way. However, the idea at the moment (pending further testing) would be that the progress report would emphasize the positive things, such as simply checking in on the app.

Different CBT exercises

According to the players responses in the first phase of the game (check in), a suitable response and exercise is offered from known practices in cognitive behavioral therapy. Here are some possible topics with questions that chatbot would ask:

1. Analyzing thought
   a. What unhelpful thoughts do you have?
   b. Does it contain any distortions?

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      c. How can this thought be challenged ?

      d. What is another way of thinking about this?

2. Practicing gratitude
   a. What are you grateful for today?
   b. Gratefulness for a memory:
      i. Why was this experience memorable?
      ii. How does the memory make you feel?
   c. For today:
      i. What one positive experience did you have today?
      ii. How did this positive experience happen?
      iii. Why was it meaningful?
      iv. What can you do to have more of this positive experience?
   d. For a person:
      i. To whom in your life are you grateful for?
      ii. What is the one thing you usually take for granted?
      iii. Imagine it absent, how might it happen?"

3. Goal setting
   a. What is a goal you would like to work on?
   b. What problem would that goal be solving?
   c. How specifically different would your life be if you reach your goal?
   d. What will you need to do to achieve your goal?
   e. What obstacles might come up?
   f. What can you start doing tomorrow to work towards your goal?

4. Practice love languages
   a. What words of affirmation can you say to your partner that shows that you care.
   b. How can you create opportunities for quality time together   What gifts can you give to symbolize your affection?
   c. What acts of service can you provide that contributes to your partner's health and well-being?
   d. How can you grow connection and care through physical touch?

5. Planning; your WHY
   a. What would you like to do?
   b. What problem would that solve?
   c. What problem would it create/keep?
   d. Identify a task that feels daunting. Break the task down into small steps (10?)Check the box after you complete each step.

6. Explore your anxiety
   a. What are you afraid will happen?
   b. What's the likelihood of that occurring?
   c. What could you do if that were to happen?

    d. Identify a possible cognitive distortion in these beliefs

    e. Where do you think it likely came from?

    f. What is the rule, attitude, or assumption you've set for yourself based on this belief?

    g. How can you challenge and change that rule,attitude, or assumption to be more confident?

7. Managing stress

    a. What led up to the situation?

    b. How were you feeling right before how stressed you are?

    c. What were you thinking just before you made that comment?

    d. What triggered those thoughts?

    e. What beliefs did you have that caused your stress to be triggered? Identify a possible cognitive distortion in these beliefs

    f. Try to come up with a more balanced way of thinking

8. Self care and self image
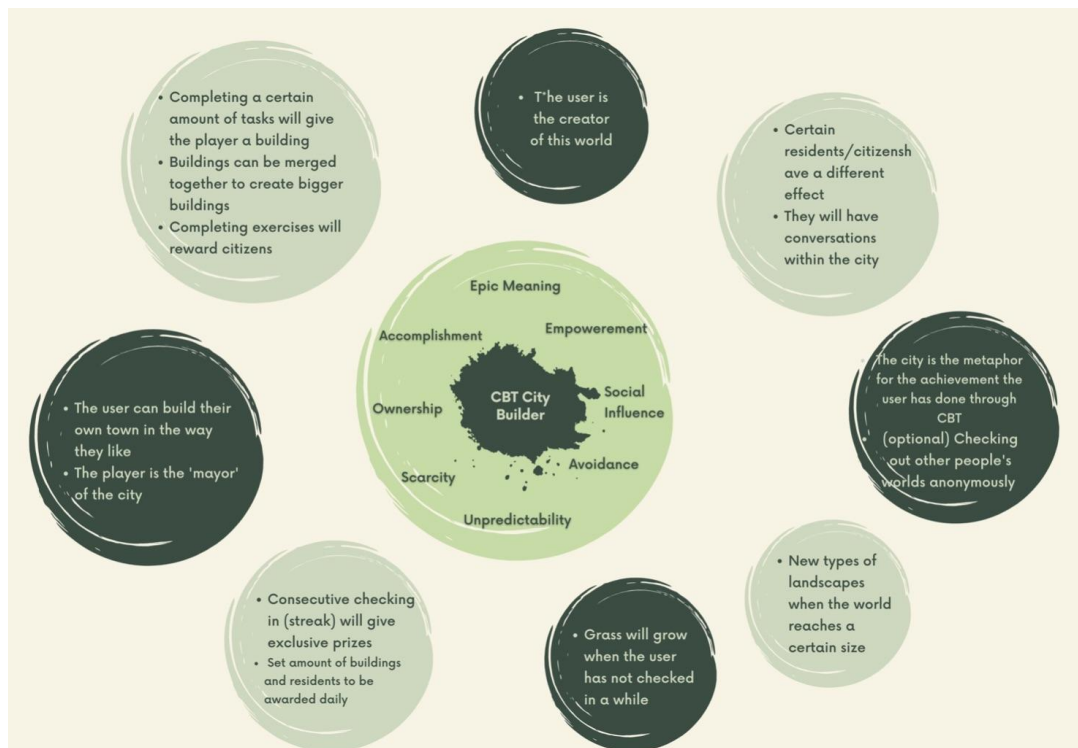
9. Managing emotions

10. Stress and change

11. Environmental anxiety

12. Focusing on the positive

RESIDENTS
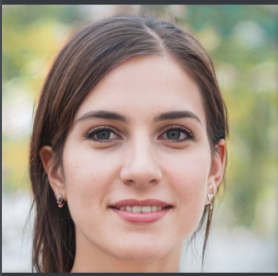
Each resident in the game represents a type of CBT exercise. One of them is already there when you enter the game for the first time (Narrator Poku). The player will start interacting with this character in the form of a chat.

The player is rewarded with items that they can use in the game on almost every step. Sometimes these rewards are new residents that open new possibilities for different exercises. Interacting with them also takes place in the form of a chat.

RESIDENT	APPEARANCE (EXAMPLE)	TYPE OF EXERCISE
POKU		Narrator (check-in, mood tracking, praise phrases etc.)
BAFA		Managing emotions
CRUDIBAT		Practicing gratitude
GOULU		Goal Setting
LIZU		Analysing Thought

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- Completing a certain amount of tasks will give the player a building
- Buildings can be merged together to create bigger buildings
- Completing exercises will reward citizens

- The user is the creator of this world

- Certain residents/citizensh ave a different effect
- They will have conversations within the city

Epic Meaning

Accomplishment **Empowerement**

Ownership **CBT City Builder** **Social Influence**

Scarcity **Avoidance**

Unpredictability

- The user can build their own town in the way they like
- The player is the 'mayor' of the city

The city is the metaphor for the achievement the user has done through CBT (optional) Checking out other people's worlds anonymously

- Consecutive checking in (streak) will give exclusive prizes
- Set amount of buildings and residents to be awarded daily

- Grass will grow when the user has not checked in a while

- New types of landscapes when the world reaches a certain size

User persona (typical user for our product)

NAME	TYPE
Jane Doe	**Artisan**

Goals
- Reducing the frequency of drug use, ideally, stopping drug use altogether
- Reducing anxiety
- Having a positive outlook on life events
- Seeking a way to feel content without the use of substances

Quote
I cannot focus otherwise

Demographic
- Female — 26 years
- Viljandi
- Divorced
- Actress

Background
As an actress, Jane has been badly affected by the pandemic professionally and personally. The slowdown of film productions has taken a toll on her annual income making her consider a career switch. Her recent divorce also adds up to the self-doubt that she has when it comes to life decisions. She uses LSD and other psychedelics to temporarily get herself out of the negative thoughts whenever she has them, though after every use it not only goes back to square one but also gives her a sense of guilt. So currently, she's taking part in CBT treatment at the local hospital to get rid of her dependence on drug use and to find her positive outlook in life again.

Technology

Motivations
- Rewarding experience/encouragement during CBT treatment
- Seeing improvement in thinking pattern

Frustrations
- Keeping herself motivated
- Self-doubt
- Disappointment in herself
- Prejudice from other people when they know she takes psychedelics
- Social circle of friends who abuse substances

Channels

Empathy map

① WHO are we empathizing with?

A person who actively seek help for their substance use habit by participating in CBT treatment

GOAL

② What do they need to DO?
- Changing their thinking pattern that may leads to behavioral change
- Keeping a journal of their thinking pattern (negative and postiving thought)
- Doing excersises given by the treament
- Commiting to a routine check-in with the journal, when to give input to the journal

⑦ What do they THINK and FEEL?

PAINS
- Embarassment, shame
- Guilt after drug use,
- Disappointment on themselves,
- Uneasy feeling about prejudices
- Trying to get over but don't know how to get started
- The fear of asking for help

GAINS
- A way to feel content
- Overall feeling improvement without the use of substance
- Positive thoughts domination
- Reduction in anxiety
- Reduction in substance use
- Notice positive things
- Gratefulness
- Resume/appreciate social interaction

⑥ What do they HEAR?
- "You're doing too much"
- "You should cut it down"
- "High functioning people still doing drugs and keep good business people"
- "As long as it's not interfering with your jobs"
- Social bias and prejudice toward drug users

③ What do they SEE?
- Good CBT journal apps cost something
- Statistical app, not instructing people or giving suggestions
- Most apps giving feedback, not giving much reward
- See possibilities to use drug instead of any helping app
- Seeing their friends using substance
- Seeing things that approve their substance use

④ What do they SAY?
- Excuses, supporting materials that support their argument
- "I cannot focus otherwise"
- "It helps me feel relaxed"

⑤ What do they DO?
- Rewarding themselves with drugs
- Taking substance to forget/ease their problems
- Recovering from drug use or preparing for the next cycle

Further plan out of LIFE:

Further development

Controlled trial- possibly with Estonian National Health Foundation (Tervise Arengu Instituut), but before that putting the game to the Technopol Incubator for further development (beginning of 2022)Handing over the prototype for further development into Alpha.

The Estonian National Health Foundation has already shown interest in developing it further and possibly conducting a study on it.

Branding

This concept can be useful for everyone who wishes to improve their mental health and therefore has a great potential to be a very popular application for wider use. Our team has even discussed further collaboration with companies, who like to contribute to projects that show them as socially responsible organisations. For example some of the rewards from the game can be transferred into the real world as discount vouchers or gift cards that can be used for the sponsors' products or services.

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Privacy and ethics

Privacy is a crucial part of the game, considering that the target audience are people who need help with substance abuse and/or mental health issues. It is important that, for one thing, the game does not look to the outsider's eye to be something related to therapy or substance abuse.

In further versions of the game, there may be the possibility of visiting other players' cities, meanwhile being entirely anonymous, just as everything else the player does in the game. The results will be personal and only shared with the therapist or other people with the player's consent.

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