TRAIVR
Training of Refugee Offenders by Virtual Reality

IO3. Manual for scenario writing for Virtual Reality (VR) programme to teach stress management to refugee offenders

Oana Murgeanu-Manolache
Ioan Durnescu

Date: 5/10/2023

Erasmus+

Change Control

Document Properties

Deliverable No.		3	
Work Package No.	WP3	**Work Package Title**	IO3. Preparation of a Manual for Scenario Writing for Virtual Reality (VR) Programme to Teach Stress Management to Refugee Offenders
Author/s		MURGEANU MANOLACHE; Oana | European Strategies Consulting DURNESCU; Ioan | European Strategies Consulting	
Contributor/s			
Reviewer		All partners	

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Introduction

The TRAIVR project is co-financed by the European Commission under the "ERASMUS + KA2 - Cooperation for innovation and the exchange of good practices" line, specifically "KA204 - Strategic Partnerships for adult education". It aims to develop Strategic Partnerships for adult education with virtual reality as an innovative solution to help vulnerable groups (refugees and substance users).

The rise of refugee and immigrant numbers also escalates the potential for unfulfilled basic and mental health needs, possibly driving these susceptible individuals towards dangerous behaviors such as substance abuse or criminal activities. Probation systems in many European countries, overseeing individuals involved in substance use and criminality, provide training on positive coping mechanisms to thwart recidivism among offenders. Nevertheless, the system grapples with challenges in managing refugee offenders due to language barriers and the inability to access stress-coping training in their native language. Restrictions imposed by privacy rules prevent the use of recommended translation techniques.

The current project **aims** to bridge the language gap and facilitate rehabilitation for refugee probationers with substance use issues by developing a VR programme to enhance their coping skills. Substance use will be viewed as a manifestation of a lack of problem-solving skills, and the target group will be identified based on this criterion. VR's interactive learning environment allows participants to engage in and practice skills, thus providing superior adult learning opportunities, overcoming language barriers, and maintaining confidentiality. The pilot study will be conducted on substance-user refugee offenders from Turkey and Portugal.

Furthermore, the VR scenario's adaptability to various languages makes it cost-effective. The technique possesses preventative power as the same scenario can be utilized in standard settings. However, VR development demands substantial effort in content preparation, scenario creation, VR modelling, and training application for refugee probationers, necessitating collaborative work. Given that language barriers are a widespread issue, international attention is crucial for solution implementation. Not only will the project enhance the management quality of refugee offenders, but it will also

propose a solution and serve as a model for training non-natives. Ultimately, the project's end product could also function as a preventative tool for refugees, equipping them with problem-solving skills before encountering risky situations.

This manual is part of the IO3 - **Preparation of a manual for scenario writing for Virtual Reality (VR) programme to teach stress management to refugee offenders**. It is based on the results of the literature review conducted by Başkent University (IO2), the results of the need analysis (questionnaire and interviews) conducted by Ankara Probation Directorate (IO1) and contribution from IPS, Becure, ESC on activities done under IO3. **The aim of IO3 is to define the strategies and scenarios for stress management, rehabilitation, and coping skills.**

Target Group

The following chapter is based on the data collected under IO1 - Need Analysis, namely 100 questionnaires applied to probation staff and ten interviews with refugees under Ankara Probation supervision. **The following data analysis is tailored to define the strategies and scenarios for stress management, rehabilitation, and coping skills, and it will be the framework for the scenario-writing stage of the project.**

A wide range of experiences, struggles, and narratives cast light on the complex challenges refugees face. Language barriers are a significant obstacle in various aspects of their lives, including integration, employment, and social interactions. Employment challenges reveal systemic issues such as low wages, exploitation, and discrimination. Cultural adaptation involves struggles related to assimilating into Turkish society, while legal and social support is often characterized by a lack of information and accessibility to vital services for refugees.

The data analysis reveals several key aspects related to refugee offenders under probation in Ankara. Commonly committed crimes by refugees include **substance use and theft**, which suggest potential socio-economic struggles. A significant portion of refugees has 3 to 4 children, highlighting potential additional **financial and social stresses and the need to access resources and support**.

An examination of the data regarding the nationalities of foreign probationers registered with the Ankara Probation Directorate reveals a diverse group. With a total of 55 individuals, Syrian nationals predominate the group, which may be indicative of the geopolitical and humanitarian situation in Syria. The second-largest group consists of 44 Iraqi nationals, trailed distantly by 12 Afghan probationers. The **linguistic profile of the probationers is dominated by Arabic speakers**. This aligns with the number of Syrian and Iraqi nationals within the group.

Refugees are struggling with integration into new culture. When confronted with a variety of **unfamiliar local customs, values, and norms**, they frequently find themselves divided between their core cultural identity and the need to assimilate into the new social framework. This conflict is not only an issue of traditions but also an intricate mix of **misunderstandings, stereotypes,** and, at times, curiosity from locals about their

customs and beliefs. For example, polyamory and particular religious beliefs are not only points of cultural divergence but also, on occasion, sources of alienation and tension.

However, the difficulties of adaptation are not uniform, as **age and length of time in the new country** shape the refugee's cultural experiences. Young immigrants may find the new culture to be relatively easy to navigate, whereas older refugees may struggle with the change, which demonstrates that a semblance of cultural similarity or even subtle resemblance can help on the path of adaptation.

This **lack of belonging can generate psychological distress** and can thwart the integration process, hampering their ability to establish constructive connections and engage positively with the local community and its norms.

Some refugees receive assistance from positive networks, whereas others fall victim to isolation or negative influences, which exacerbates feelings of exclusion or alienation.

In addition, some refugees conceal their struggles by denying them, possibly reflecting a pressure to project resilience or to avoid drawing attention to their difficulties. This denial could be the result of a variety of factors, **including fear, stigma, and self-preservation.**

Adaptation problems for refugees and families also include **language, education, and employment**.

According to the data collected, cultural integration is notably associated with crime, pointing to cultural integration as a critical factor in reducing offender rates. Legal and employment issues also show significance, correlating legal knowledge and economic stability with crime rates. Educational and economic status also plays a role in the vulnerability of refugees to illicit activities. Despite differences in educational and social statuses, economic hardships and **employment challenges** are common threads in their experiences.

Concerning refugee resources and services, a consensus is emerging regarding the importance of language and enhancing information and service accessibility, particularly during initial settlement periods. Enhancing employment opportunities and preservation of rights while making environments favourable to cultural practices are strategies for preventing criminal activity and promoting integration.

Employment perspectives varied, and some highlighted employment problems related to temporary, low-wage positions and lack of stability. In addition, bureaucratic difficulties, especially in legal matters and documentation, are a significant challenge.

Accessibility to education among refugees presents a pivotal role in their socio-economic stabilization. Inability or difficulties in accessing education could translate into long-term economic ramifications, including limited job opportunities and reduced social mobility, perpetuating a cycle of poverty.

It's crucial to comprehend that **ongoing stress, combined with financial strain, can create a vulnerable environment that may influence a rise in criminal behaviours as a coping or survival mechanism.**

Regarding awareness and accessibility to support services, differences were observed, with some refugees indicating awareness and use of available services, while others struggled without this key knowledge.

Key points for scenario writing

Scenarios need a comprehensive approach to meet different needs, with a focus on employment, legal help, and cultural adaptation. Special care should be taken to discuss and map out how to deal with cultural and religious practices and beliefs, both in the group that is hosting the refugees and in the refugees themselves.

The refugees have difficulty communicating because they don't speak the language. This could make it impossible for them to take part in important parts of society, like getting healthcare or legal help. A lack of language skills can have a big effect on a person's sense of self-efficacy and independence, which can make them feel more alone and dependent.

Summary of the challenges

Language and Communication: Predominantly faced issues, affecting employment, social integration, and legal navigation. Connected with miscommunication and potential legal implications.

Employment and Economic Challenges: Common struggles with employment exploitation, unstable economic conditions, and employment-related vulnerability. Employment challenges can sometimes lead to engagement in illicit activities for economic survival.

Legal, Bureaucratic, and Support Services: Varied levels of awareness about and accessibility to available support services and legal pathways. Bureaucratic challenges related to paperwork and legal matters.

Influences and Criminal Behaviour: Social circles and environmental stressors act as catalysts towards engagement in criminal activities. A potential reluctance to admit the influence of social circles on negative behaviour.

Cultural Adaptation: Refugees face struggles in terms of cultural and social integration into Turkish society. This suggests that refugees may find local customs, values, and norms unfamiliar, leading to feelings of discomfort or being out of place. Religious beliefs and cultural practices, such as polyamory, have been noted as points of tension or curiosity from locals. This indicates that certain beliefs or practices intrinsic to refugee populations might be misunderstood, stereotyped, or not accepted y, leading to feelings of alienation.

Age: The varied experiences of the participants regarding cultural adaptation hint towards the importance of age, or perhaps the duration of stay in the host country, in shaping cultural experiences. Arriving at a young age might have had an easier time adapting than older refugees, suggesting that younger individuals might be more adaptable to new cultural settings.

Social Networks' Impact: The varied effects of social environments suggest that while some refugees find positive networks and communities, others may feel isolated or influenced by negative peer pressures, potentially leading to feelings of exclusion or alienation.

Denial or Downplaying of Issues: The tendency for some refugees to deny or downplay their struggles could hint at a cultural or societal pressure to appear resilient or avoid drawing attention to difficulties.

Guidelines for Scenario Writing

This guide should aid in the development of VR scenarios that accurately represent refugee experiences, providing an immersive exploration of the stressors they face and the coping strategies they might employ. Such VR scenarios should serve as insightful for a varied audience, promoting a deeper understanding of refugee experiences and struggles:

- Depict a spectrum of emotions like frustration, isolation, and moments of solidarity.
- Create scenarios where maintaining cultural identity and fostering a sense of belonging is challenged and needs active coping strategies.
- scenarios that may require coping strategies for managing stress related to economic instability and job searching.
- Highlight potential stressors arising from navigating through complex legal and bureaucratic pathways.
- Feature situations where refugees struggle with cultural and social integration, feeling out of place due to unfamiliar local customs, values, and norms.
- Illustrate scenarios that require adaptive strategies to manage tension or curiosity from locals regarding their cultural practices.
- Portray environments where refugees might be nudged towards criminal activities due to various stressors, illustrating the need for coping mechanisms.
- or might need to manage stress while maintaining a balanced behavior, preventing a fall into illicit activities.**:**
- Showcase situations where refugees might experience both positive and negative peer pressures.
- Create scenarios that explore managing social isolation and building supportive networks as a crucial coping strategy.
- Develop scenarios where refugees might deny or downplay their struggles, requiring adaptive strategies to manage potential societal pressures.

- Offer scenarios where they have to utilize coping strategies to manage stress resulting from miscommunication and access to crucial services.
- Create a variety of situations where refugees learn and apply varied coping skills and stress management techniques.
- Scenarios should promote problem-solving, emotional regulation, and adaptive thinking as key coping strategies in varied stressful contexts.
- Create experiences that delve into seeking, identifying, and making the best use of available support systems and strategies.

Scenarios Content Development

Theoretical Background

A review of how virtual reality (VR) technology can be used to teach skills, especially addressing the needs of refugee offenders with substance abuse issues, is an exploratory step in a relatively new area of research. Despite the lack of clear research results, we see a growing trend towards using VR technology as a viable way to treat substance abuse, particularly due to its ability to mimic real-world substance-use scenarios.

The engagement with VR technology, as indicated by previous research, fits into a framework where substance-related cues can be integrated into a virtual environment to evoke responses similar to those experienced in reality. Notably, various studies, such as those by Bordnick et al. 2004, have shed light on the potential of VR to induce cravings in nicotine-dependent subjects. Such capabilities can lead to creating a secure environment where substance abusers can develop coping mechanisms to navigate and potentially cease substance use, with the VR settings acting as a controlled space to manage and study stimuli-responses.

The intersection of Virtual Reality (VR) technology and cognitive-behavioral intervention, particularly in substance abuse treatment, offers a novel perspective on the technology's utility in treatment models. VR can innovatively enhance exposure-based behavioral therapy by strategically exploring cue exposure and cognitive-behavioral interventions. This approach, which aims to attenuate conditioned responses to cues traditionally

associated with substance abuse through controlled exposure, is theoretically robust yet requires additional research to confirm its effectiveness. Consideration must be given to various factors, such as the environmental setting and its immersive qualities, crucial for realistically conveying VR experiences, as indicated by Skeva et al. 2021.

However, the journey is not without its challenges and uncertainties. Despite its potential, the application of VR in substance abuse treatment is not devoid of limitations, as highlighted by Ghiţă and Gutiérrez-Maldonado (2018), noting a scarcity of studies investigating the long-term impacts and generalization of VR treatments. Furthermore, Lebiecka et al. (2021) express a cautious optimism in their narrative review, acknowledging VR treatments' potential but urging a cautious approach to findings due to their experimental status.

Moreover, VR application extends beyond exposure, exploring the realm of practicing cognitive reappraisal skills. This emphasizes VR's potential as a practical tool for offenders to practice coping strategies in simulated environments, reducing disorder-relevant behavior without endangering others.

However, the task of affirming VR's efficacy and reliability in this field is yet to be accomplished. Although VR can successfully induce cravings, studies focusing on the effectiveness of such treatments are still in their early stages, often lacking in robust, randomized controlled clinical trials and constrained by small sample sizes. Therefore, while VR technology offers a semblance of potential in assisting substance abuse treatments through approaches like cue exposure and counterconditioning, it is vital that future research employs larger sample sizes and reinforces its methodologies to confirm these preliminary findings.

Key points for scenario writing

Application of Virtual Reality (VR) in Problem Solving and Decision Making

VR has been considered a pivotal tool in enhancing problem-solving and decision-making skills due to its immersive and realistic environmental simulations. Araiza-Alba et al. (2021) highlight VR's capability to simulate sensory experiences and facilitate the transfer of knowledge. This approach was further supported by Howard & Gutworth

(2020), despite the indication that enhanced hardware does not necessarily lead to improved program efficacy. Shin (2008) draws attention to user intentionality and cognitive processing in relation to VR experiences, suggesting that empathetic and embodied experiences are formulated by users through their perceptions, needs, and empathic traits. This implies a user-centric approach should be adopted when developing VR applications for problem-solving and decision-making.

Stress Management - Utilization of VR in Enhancing Emotional Regulation and Coping Mechanisms

In the context of stress management and emotional regulation, VR's application seems to be increasingly acknowledged. Bosse et al. (2013) provide an insight into utilizing VR as a medium to understand and potentially harness emotional responses, which could cater to various emotional demands. Colombo et al. (2021) caution that while VR exhibits promise in enhancing emotional regulation (ER), substantial evidence is still needed to validate its efficacy comprehensively. Despite this, the inclusion of gaming and gamification aspects into VR treatment methodologies, as well as the immersion into relaxing environments, has been shown to be fruitful in diminishing negative emotional states and enhancing positive emotions (Pallavicini et al., 2022). The interreality approach, as proposed by Villani et al. (2014), combines the practicality of presence with technological advantages, while the methodological approach using VR in emotion regulation interventions shows promise in improving well-being and fostering a sense of environmental mastery (Montana et al., 2020).

Rehabilitation - Addressing Substance Abuse, Mental Health, and Criminal Behavior through VR

VR also extends its impact into the realm of rehabilitation, notably in addressing substance abuse, mental health, and criminal behavior. Trahan et al. (2019) offer an overview of VR exposure therapy (VRET) for substance dependence, with a significant potential especially when converged with cognitive-behavioral therapy (CBT) interventions. However, considerations regarding the meticulous profile of participants and fidelity in intervention implementation were highlighted as crucial. The empirical data presented by Hone-Blanchet et al. (2014) suggests that while VR can successfully induce cravings, its application in cue-exposure therapy within virtual environments

presents a juxtaposition of results, indicating the necessity for further investigation. Ticknor & Tillinghast (2011) encapsulate the broad applicability of VR in the criminal justice system, implying that it could be a resource-efficient approach to tackle the myriad of needs arising in criminal justice, by providing a safe and controlled environment for research, training, and rehabilitation.

Guidelines for Scenario Writing

In synthesizing the data, VR consistently emerges as a tool of potent capability across diverse applications - from problem-solving to stress management and rehabilitation. The immersive and interactive nature of VR provides a unique, controlled, and safe environment for users to explore, learn, and adapt to various scenarios and challenges.

Throughout the TRAIVR software, responsible personnel can observe the refugee offender's experience in the virtual reality environment on their laptop screens and intervene as necessary.

The software should offer Arabic, Persian, Kazakh, Kırghız, and Pashto languages for use by refugee offenders. Although symbolic language is planned to predominate in the scenarios, it is imperative for refugee offenders to follow instructions or warnings shown on the screen in their spoken language. The language menu should allow responsible professionals to manage and customize the VR experience for optimal outcomes.

While efforts will be made to minimize written instructions and rely on symbolic language, it would be necessary to provide a limited amount of written guidance due to potential limitations in the education levels of probationers. This will ensure that instructions would be accessible and understandable to all participants.

Stress management – Enhancing Emotion Regulation and Coping Skills

Objectives:

1. To help the participants to become more aware of their state of mind and emotions.
2. How to deal with these emotions in a pro-social manner and how to improve the self-control – emotion regulation.

Ideas for the stress management scenarios:		
Nature setting: beach, forest, park	Breathing exercises, relaxation, mindfulness, yoga, counting backwards, walking	Biofeedback - how to recognize different emotions by recognizing our body signs (sweating, heart pumping) OR by recognizing different facial expressions
Realistic environment - city setting	Sounds library/ Atmospheric noises	Puzzles (keeping in mind that the level of difficulty could increase the stress)
ASMR: autonomous sensory meridian response	Focusing on similarities and differences at the same time	Gardening, painting, molding clay, cooking
Spending time with family, parenting skills	Consequences of different choices	

Table 1. Ideas for stress management scenarios

Gamification

- Integrate gaming principles to promote engagement and positive emotional experiences.
- Utilize gamified stress management and coping strategies within the VR environment.

Immersion into Relaxing Environments

- Develop tranquil, calming, and positive environments that specifically cater to reducing stress and improving emotional well-being.

Problem-solving and decision-making

Objectives: The main aim of the project is to focus on coping and problem solving among refugees, using substance use only as a predictor. This means that the focus **should not be on rehabilitation of substance use behavior**, but rather on offending behavior in general. The suggestions made in Table 1, applies in this section too.

- Ensure scenarios are designed with a strong emphasis on user intentionality, perceptions, and needs.
- Integrate mechanisms to track and adapt to the user's decision-making patterns and learning curve.
- Ensure that the immersive experiences are tethered to clear, actionable knowledge and problem-solving practices.
- Develop scenarios that mimic real-life situations to enhance decision-making skills in a practical context.
- Ensure that the hardware and software are accessible and intuitive to facilitate broad user engagement and efficacy

Rehabilitation

Objective: Moral reasoning (ethical issues, to reflect on their choices)

- Harness VR's ability to safely expose users to stimuli related to their rehabilitation in a controlled manner.
- Blend VR with traditional cognitive-behavioral therapy interventions, ensuring a holistic approach.

- Develop scenarios that specifically address rehabilitation needs within the criminal justice system, providing avenues for safe social reintegration and skill development.

Scenarios Outline

Example game design

The game will be designed as a first-person adventure game with interactive story elements. The player will navigate through different environments and make choices that affect the storyline and their character's progression. The overall gameplay will focus on stress management and problem-solving, where the player must navigate a new environment while learning how to overcome addiction and rebuild their life.

The gameplay mechanics will include decision-making, exploration, and puzzle-solving. The goal of the game is for the player to complete their rehabilitation journey and overcome their addiction successfully. The game will have multiple endings based on the player's choices throughout the game, providing replay value and different outcomes for each playthrough.

Game Concept

The game concept is based on the research evidence that many justice-involved individuals have difficulties in defining a problem, generating alternative solutions, selecting the best solution and plan for its implementation.

The Problem-Solving Game (PRG) aim at developing some of these skills while teaching the individual what is the planned manner to solve problems.

The game will start with a self-evaluation survey that will help individuals to understand what their dominant problem-solving style is. Next, they will be exposed to the planned approach of problem-solving.

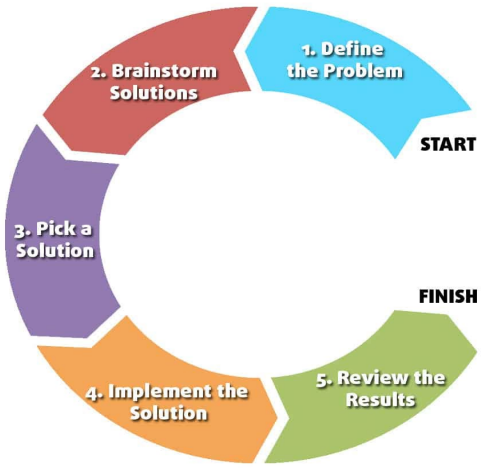
The following challenges will help them develop the skills associated with generating alternative solutions and planning for implementation.

Game Goal

The goal of the PSG is to train the individuals to use a planned manner to deal with the problems effectively.

Game Mechanics

1. The PSG starts with a small story about problems and how they can lead to bigger problems if they are not dealt with in a planned manner. We can use some examples from real life.
2. Next, the player is invited to reflect on their own problem-solving skills: how good do they think they are? What is their problem-solving style etc. In supporting this reflection, they can be invited to witness some situations and answer some questions: e.g. was that planful? What that avoidance? Was that impulsive? Which style seems to be their own?
3. In the next section, the player is asked to define what a planful approach can look like. Here, we can use a puzzle, and we can ask the player to organize the pieces in the right order. We can use this figure and make it as a puzzle:



4. Next, we can imagine some small stories where we could ask the player to decide what are the steps to solve the problems in a planned manner.
5. In developing the skills associated with generating alternative solutions, we could give them ten words or ten images and ask them to make a story out of them.

Alternatively, they can be asked to make as many associations as possible with them.

6. For the same purpose, we can ask the player to come up with ten different solutions to the same challenge. We can give them a typical problem that refugees encounter when they enter a new country: finding accommodation, finding a job, getting the citizen papers in good order etc. We can give them 20 options, and we can ask them to select the ten correct ones.
7. The next section will be on how to select the best solution. Here we can suggest some challenges where they can be thought to assess risks, to make an advantage-disadvantage calculation, and so on.
8. The game will finish with a challenge that stresses the importance of putting the plans into action.

Graphics and Designs

The game can be imagined as a journey that follows the stages of the problem-solving process. PSG will be based on stories, challenges, puzzles and so on.

Collecting Data

Collected data will be on the local computer. Game data will be saved on csv files on the local computer.

Player Customization

It would be best for the player to be embedded into the game. S/He will not see her/himself but only what is around.

Conclusions and recommendations

The recommendations are based on **what can be done to help refugees deal more effectively with the unknown**, with uncertainty, and with stress and anxiety associated with it. Also **- what can be done with those refugees under probation supervision in order to support the change in their behavior?**

In terms of stress management, first, we should take into account coping with the new environment**. Based on the results of IO1 and IO2, the** refugees are very stressed out due to cultural, social**, political, and religious** differences. Therefore**,** it's important that **we provide or enhance their** coping skills**:** how to deal with the new environment and how to manage their expectations. Secondly, emotional management is another key aspect when considering the scenarios. **Based on the two prior intellectual outputs,** they are dominated by emotions **- negative** emotions in particular. **In this sense,** we suggested breathing**,** mindfulness exercises, and progressive muscle relaxation **in a natural environment.** Finally, based on the literature, it would be beneficial to use some games for problem-solving because it seems that most of the stress comes not only from anxiety and novelty but also from the difficulties in dealing with some concrete problems: how to find accommodation, employment, how to deal with some daily challenges.

Also, games **for decision-making** and **risk-taking and moral reasoning** are key aspects of rehabilitation.

- Create VR scenarios that simulate genuine challenges and decision-making situations refugees might face, thereby developing their problem-solving skills in a safe, risk-free environment.
- Develop scenarios that are intricately tied to the authentic experiences, needs, and cultural sensitivities of the refugees.
- Leverage VR's capability to create relaxing and therapeutically beneficial environments for stress management.
- Implement VR interventions that assist in developing emotional regulation and coping mechanisms, especially for dealing with the stressors experienced during displacement.

- Leverage VR's capability to create relaxing and therapeutically beneficial environments for stress management.
- Provide stress-relief exercises and mental health resources through VR.
- Mindfulness exercises to manage psychological stress.
- Ethical considerations are paramount in VR applications, safeguarding user data and ensuring psychological and physical safety during use.

Features:

- Linguistic Diversity: Available in Arabic and other native languages of refugees to ensure comprehensive understanding and usability.
- User-Friendly: Ensures easy usability for all age groups, considering that age affects tech-savviness and adaptability.
- Security: a secure and private space for refugees to explore and learn

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