GERMAN CO-CREATION WORKSHOPS
SUMMARY

Summary

The TRIO project aims to provide adult education in digital, health and data literacy for the empowerment of citizens. A digital learning platform will be created that will ensure adaptation to the changing needs of users, technology, and context. Therefore, it is necessary to understand individuals in context, which led us to the approach of co-creation workshops.

The co-creation workshops were research sessions designed to identify the main difficulties in accessing wellbeing and health-related information via the internet. The TRIO project provides online activities with the use of games as a playful way of learning. One of the aims was to identify the games that each of the target groups of the project (18-35 years; 36-50 years and 51+ years) prefer to use for learning. The sessions were carried out in a relaxed atmosphere with groups of people of the same age and without the use of computers. The sessions took place in 5 different European countries: Portugal, Spain, Netherlands, Germany, Romania, in February/March.

Figure 1 – The Group 51+ sitting together.

How the workshops were held in Germany

The co-creation workshops carried out with the target groups in Germany involved 9 people, where in every age group 3 persons were working together. They have all been conducted by the same facilitator of ISIS. Before the workshops began the participants were informed about the workshop and about the consent form that they had to fill in for data protection. Overall, the workshops took about two hours per session, due to a lot of fruitful discussions between the participants.

Outcomes of the co-creation workshop

Within the first activity participants were asked to choose 6 cards and to sort them by difficulty level. These cards contained a goal and a practical description of that goal. The cards were grouped by TRIO project themes: 1) Digital Literacy 2) Health Literacy 3) Data Literacy. After the participants chose a rank for all the cards, only six cards with the highest difficulty levels remained in the end.
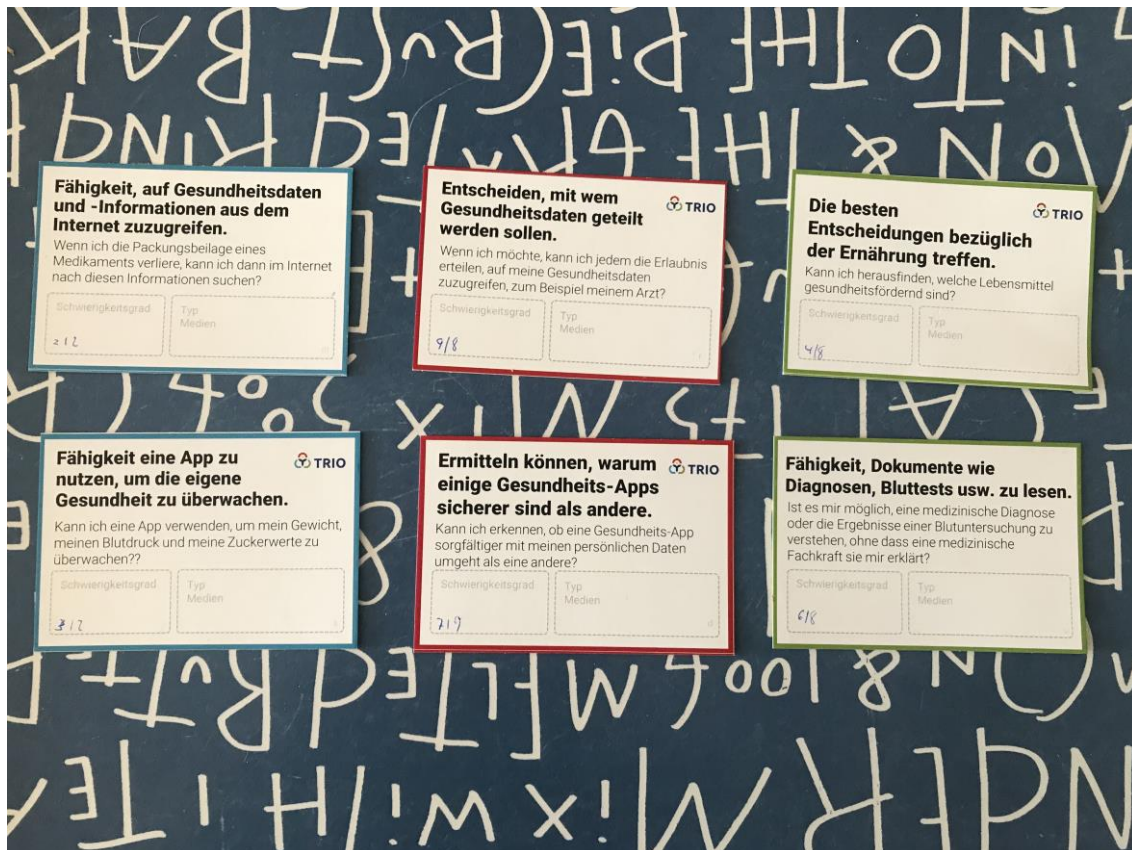

Figure 2 – Activity 2: What are my biggest difficulties: Group 18-35

The following tables show the questions asked in the cards, with only the objectives and the corresponding answers, ordered by difficulty (from 1 or most difficult to 8 or least difficult). The two rows highlighted in the tables are the selected difficulties, as they correspond to the difficulties that all the participants considered to be the most challenging. Sometimes the participants considered several tasks with the same difficulty which is why not in every category there is a range between 1 and 8 displayed. Also, if two skills were at the highest difficulty level within the category the participants chose the one which was perceived as more difficult. The red ones are always the two most challenging options for the age group. Table 1 presents data on digital literacy.

Table 1 - List of difficulties related to digital literacy and order of responses by age group.

DIGITAL LITERACY (Difficulties)	18-35	36-50	51+
a. Make use of your cell phone's reminder feature. Can I make use of my mobile phone's reminder function to notify me of medical appointments or exams?	8	6	3
k. Make use of an app to track my health. Can I use an app to track my weight, blood pressure, and sugar levels?	5	5	1
l. Become familiar with information data with graphs. Do I understand health-related graphs, such as the one showing the transmission of Covid 19?	5	3	2
m. Ability to access health information on the internet. If I lose the instructions for a medicine, can I go online and look for it?	5	4	3
p. Understand new types of health information, such as using 3D images of a body. Can I better understand my doctor when she/he shows me an organ in a 3D image?	8	5	2
s. Identify which digital health services are available. Are there different digital health services that are useful but I do not know them?	7	1	4
v. Ability to use the digital services that are available. Do I understand how to use digital health services that are available? (e.g., Insurance Health Application)	7	2	1
x. Ability to buy health products online. Can I identify if an online store is safe and legit?	6	4	4

When looking at the data gathered from the participants it gets clear that basic digital skills such as using the reminder feature on the smartphone or to buy medical products online do not display real practical problems for the participants. What's interesting on the other side is that tracking apps are perceived as being not so easy to use. Further some findings from recent publications and the experts' interviews can be sort of confirmed within our panel. Especially the older age groups find it very difficult how to use digital medical services such as insurance apps or the ePA in Germany. Younger participants perceive this as way easier as most of them already use or used such services already in the past. What was also really noteworthy is the fact that the younger and the older age group thought it is easy to identify which services are available. After an explanation about which services are in fact available in Germany, they found out that in the end, they did not have the level of knowledge that they expected.

Table 2 presents data on health literacy.

Table 2 - List of difficulties related to health literacy and order of responses by age group.

HEALTH LITERACY (Difficulties)	18-35	36-50	51+
g. Know how to look for more information. If I want more information about my health, do I know what to look for?	6	2	4
n. Ability to understand health information. Can I understand the instructions on a medication?	5	6	1
q. Make use of the social media for getting health information. Can I use social media to find out health information?	4	7	3
r. Identify the best food choices. It is possible for me to identify which foods promote good health?	3	5	4
t. Ability to use health information in real life. Can I adequately use the health information that I find on the internet?	3	5	3
u. Ability to read documents like diagnoses, blood tests etc. Is it possible for me to understand a medical diagnosis or results of a blood test, without a medical professional that explains it to me?	2	1	1
y. Make online health procedures. Can I handle a medical consultation online?	5	3	2
z. Health service to be used 24 Hours. Can I find online a pharmacy that is open at night?	7	4	4

Regarding the health literacy skills of the participants within the activity a clear picture emerged. All of the participants groups chose **"u) the ability to read documents like diagnoses, blood tests, etc."** as the most difficult ones. They further explained that especially when those tests are sent by mail without a further explanation by their doctor it is especially challenging to identify what several medical terms or numbers mean and how to interpret them. This fits to the results from recent German panel studies which explored a similar problem in Germany. Also, **medical online procedures like consultations** were perceived as not so easy to use for the middle and the older age group, where the younger ones perceived those technologies as useful, e.g., to save time when there are only minor things to clear with their doctor.

Table 3 presents data on data literacy. Here the older age group chose three skills as the hardest, as they could not decide which one is the most difficult.

Table 3 - List of difficulties related to data literacy and order of responses by age group.

DATA LITERACY (Difficulties)	18-35	36-50	51+
b. Identify why it is important to accept or decline access to your private data in an app. In an app, can I understand what is important to accept or deny access to?	3	4	3
c. The ability to access your own health data. It is possible for me to log in to an app and access my health information?	5	6	4
d. Identify why some health apps are more trustworthy than others. It is possible for me to tell whether one health app is more careful with my personal information than another?	1	2	1
e. Make sure your personal health record is protected. Do I know whether or not my personal health record can be accessed by others without my permission?	4	2	1
f. Decide with whom my personal health record will be shared. If I want, can I grant permission to anyone to access my health data, such as my doctor?	1	2	5
h. Become familiar with saving data digitally. Can I organize my medical documents digitally (on my computer or cell phone)?	4	7	2
i. Identification of important patient data. Do I have to bring my medical tests to explain my health to my doctor?	6	3	4
j. Identify what is important to accept/or not in medical documents. Can I read and sign a document accepting the use of my personal data, like General Data Protection Regulation?	6	5	2
o. Identify the accuracy of health Information on the internet. Can I identify the reliability of health information on the Internet?	2	1	1

Looking at the data literacy numbers it gets recognizable, that within this sphere the participants had their biggest issues. Especially the ability "**o) to identify the accuracy of health information on the internet**" is perceived as very hard. The participants further pointed out that to ensure this it would be needed to compare different websites or other sources and that they would look for a logo or something similar that gives them a kind of proof that the source is legit and trustworthy. What emerged also challenging for the participants is **"d) to identify which digital services are more trustworthy than others"**. Also, they explained that **e) and f)** are challenging tasks that source from the same problem, which is to identify who has access to their data and therefore could make use of it. This is a striking note as in Germany only the doctors and the insurance providers store their patient data, which also most of the participants had suspected. Nevertheless, the participants thought that it would be quite easy for someone to "steal" their data from one or another place where they are stored.

Figure 3 - Activity 3: How do I prefer to receive information? Selection of the Age Group 51+.

As next activity the 14 different media types were presented to the participants. The task now was to select the six media types that they would prefer for receiving health related information. In Figure 3 the selection of the age group 51+ is displayed as an example. In the table below the results from all three target groups are presented. In the age group 18-35 the participants had to be asked in two steps, which is why for them more media types are presented. The types that were chosen by all are marked with "xx".

Table 4 - List of the preferred media for the reception of health information.

Type of media (preferred)	18-35	36-50	51+
Step by step	XX	X	
Video conference		X	
Infographic	XX	X	
Video	XX	X	X
Social media post	X		
Image			X
Augmented reality		X	X
E-mail	X		X
Graphs	X		
Chat	X		
Podcast			X
3D		X	X
Newspaper	X		X
Text only	X		

Regarding the selected media types it can be noted that the different age groups have some differences regarding their learning preferences, but in the end those were not as big as expected. Half of the items that were displayed were selected by at least two age groups. Those are: **"3D"**, **"Newspaper", "E-Mail", "Augmented Reality", "Infograph", "Step by Step"**. The media type that was preferred by all of the participants is the **"video".** One explanation of an older participant was that in a video a topic or task can be explained when simultaneously it is shown how to do it, e.g., in case for a rehab exercise.

As a next step the participants had to match their favourite media types with the skills that they had identified as the most difficult ones. Those results cannot really be compared as they differ the most from each other (see Figures 4-6).
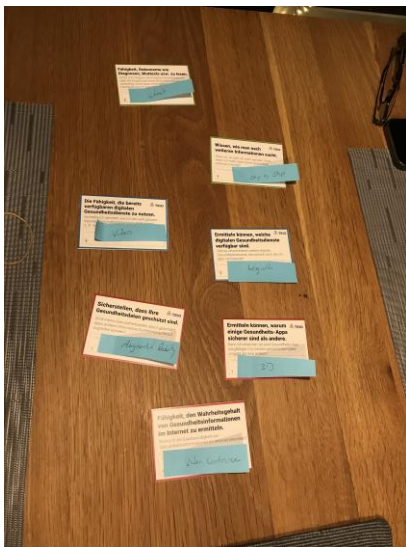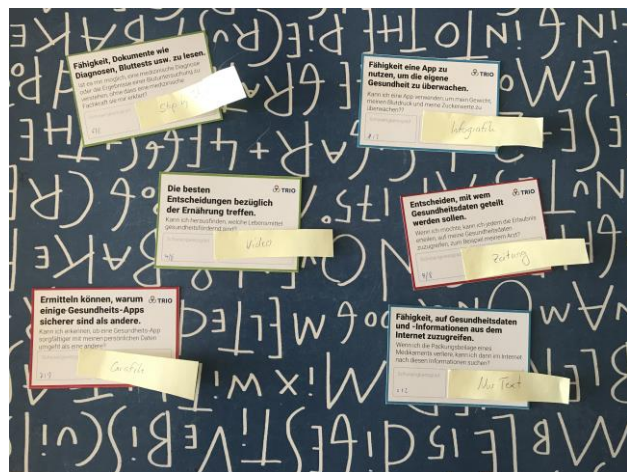

Figure 4: Pairing Results from Age Group 36-51

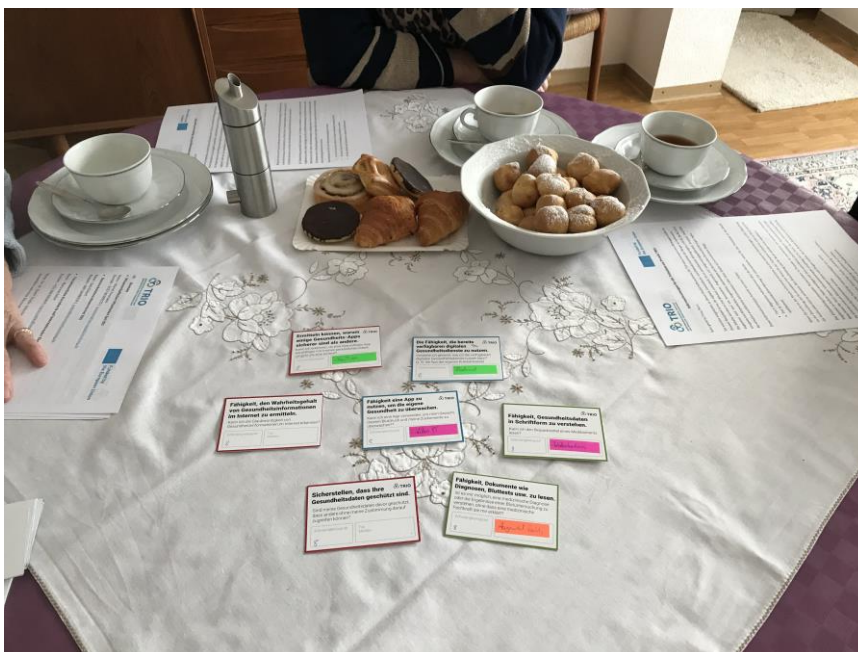
Figure 5: Pairing Results from Age Group 18-35

Figure 6: Pairing Results from Age Group 51+

In this last activity, 9 different cards were presented, on the left side there was a blank space to place the difficulty card and a list of icons with types of media to select, as well as a space to write. On the right side of the card there was the design of a drawing of a mobile phone with different types of games. In total, 9 types of games were presented.
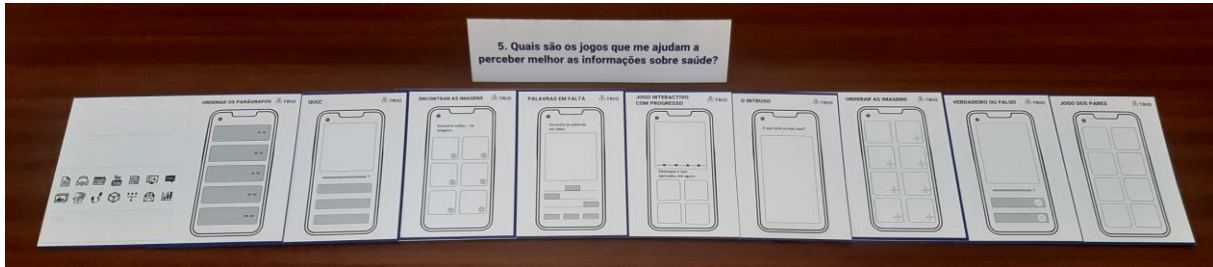

Figure 7 - Activity 5: Which games help me better understand health information? Cards with 9 templates of the games.
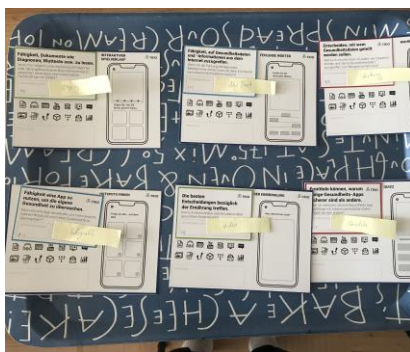

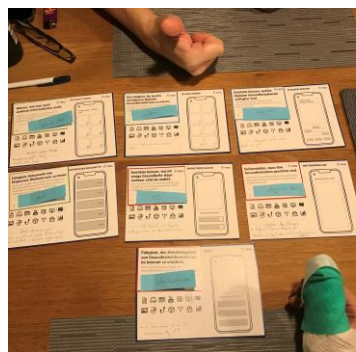Figure 8 - Final workshop outcomes (18-35 group).
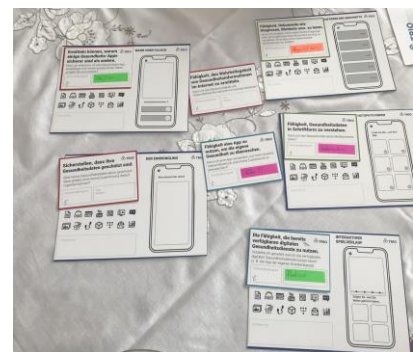

Figure 9 – Final outcomes 36-50 group.

Figure 10 – 51+ group.

This activity aimed to identify the types of games that participants would like to learn through. They had to choose the game they thought best suited the chosen media type and difficulty. Sometimes it was really difficult for the participants to imagine a fitting game type for the problem that they had in their minds, so in some cases no game type was selected by the participants.

Table 5 - The results, information about the difficulty in Digital Literacy, the order number, the preferred media and game.

DIGITAL LITERACY (Difficulties)	18-35			36-50			51+		
	N	MEDIA	GAME	N	MEDIA	GAME	N	MEDIA	GAME
k. make use of an app to track my health	5	Infographic	**Find Hotspots**				1	Video	**?**
m. ability to access health information on the internet	5	Text only	**Missing words**						
s. identify which digital health services are available				1	Infographic	**Missing words**			
v. ability to use the digital services that are available				2	Video	**Order images**	1	Podcast	**Interactive Game Process**

When looking at the different media and game types it gets clear that the target groups partly share the same estimation regarding the difficulty of tasks but would like to learn about them with different approaches. While the **middle age group would like to see a video** that explains **the digital services available** the **older age group would prefer a podcast** where someone **with a health/medical background that they can trust and rely on explains** them the given topic.

Also, the older adults would prefer an **interactive game process** whereas the middle age group would prefer to **order different services within images**. What's interesting here is that e.g. regarding **the ability to make use of an app to track ones health** the **younger age group would prefer "infographics"** as a learning medium whereas **the older age group would like to see a video on YouTube** that explains the topic. Within the next table the results for the health literacy area are displayed.

Table 6 - The results, information about the difficulty in Health Literacy, the order number, the preferred media and game.

HEALTH LITERACY (Difficulties)	18-35			36-50			51+		
	N	MEDIA	GAME	N	MEDIA	GAME	N	MEDIA	GAME
g. Know how to look for more information.				2	Step by step	**Find hotspots**			
n. ability to understand health information							1	Video Conference	**Find Hotspots**
r. Identify the best food choices.	3	Video	**The intruder**						
u. Ability to read documents like diagnoses, blood tests, etc.	2	Step by Step	**Inter-active Game Process**	1	Chat	**Sort the paragraphs**	1	AR	**Sort the paragraphs**

Regarding the health literacy skills also different media and game types were selected by our three target groups. What is striking within this skill area is that all age groups would like to have detailed information via step-by-step explanations, chats with medical experts or visualizations via augmented reality. This shows even more thoroughly that regarding medical documents such as blood tests and diagnoses detailed information and assistance for the understanding of medical terms and figures is needed. Further it is noticeable that the middle and the higher age group chose the exact same game types, what leads to the assumption that within the planned TRIO learning platform their game learning approaches could be designed comparably.

Table 7 - The results, information about the difficulty in Data Literacy, the order number, the preferred media and game.

DATA LITERACY (Difficulties)	18-35			36-50			51+		
	N	MEDIA	GAME	N	MEDIA	GAME	N	MEDIA	GAME
d. Identify why some health apps are more trustworthy than others.	1	Graphs	**Quiz**	2	3D	**True or false**	1	Video	
e. make sure your personal health record is protected				2	Augmented Reality	**The intruder**	1		**The intruder**
f. decide with whom my personal health record will be shared	1	Newspaper	**True or False**						

Within the data literacy area the participants of the younger and the middle age group shared similar ideas on how to gain knowledge through gamification elements. Both groups formulated that they would need **some kind of more detailed comparison of which health apps are more trustworthy** and especially **why this is the case**.

A true or false game as proposed by the middle age group could include information such as **"indications that websites are trustworthy".** Such could be labels from governmental institutions or other well recognized medical actors such as the Robert-Koch-Institut. Also, it is interesting to note that also the younger age group would prefer true or false questions in this area for skill **f) decide with whom my personal health record will be shared** and to receive information from the newspaper, so for the learning platform newspaper articles or other trusted publications from well-known scientific sources could be linked.

The findings

Concluding the major findings from the workshops it can be said that the **knowledge gaps** of the participants in Germany **concentrated on some distinct skills** in every area, where the selection of difficult tasks was the clearest over all participants in the area of data literacy.

Within the area of digital literacy the participants **face the biggest challenge in using digital apps and services to monitor their health or make use of other services like apps** from their insurance providers. Those **gaps should be targeted with infographics, videos or podcasts from experts** so that the participants can get an overview what's available and how to use it.

Within the health literacy area is **really hard for all age groups to understand patient data such as blood tests or diagnoses.** This topic **needs further explanations by medical experts, for example via AR visualizations that are explained by a doctor, via step-by-step explanations, or a live chat with medical experts** that are trustworthy for the participants.

But finally, the clearest picture emerged regarding the data literacy skills of the participants. So, it emerged to **be difficult for all age groups to make sure what happens with their patient data and how to recognize that digital health services** can be trusted. Here all participants would wish to **have trustworthy comparisons and explanations via graphs, 3D visualizations or videos** from medical experts, but within different media forms and game types.

Overall, it can be noted that the **game formats that are quite simple and easy to understand were the most popular ones**. Those were the game types: **find hotspots (3 votes), the intruder (3 votes), missing words (2 votes), interactive gaming process (2 votes), sort the paragraphs (2 votes) and true and false questions (2 votes)**.

What's interesting to note here is that **true and false questions and sort the paragraphs** were **concentrated in either one area**. This could be resulting by similar ideas and needs of the participants. When trying to understand medical documents most of participants preferred to have clear ranked information, e.g., a **ranking of which are "normal" values of different relevant blood ingredients when receiving a test result** and which are not. When looking at data protection and doubts about trustworthiness of services two groups preferred **true or false questions where it gets completely clear after one question, suggestion or answer e.g.** where personal data is stored or how to identify apps that are trustworthy.

In the end it can be mentioned that the participants were very pleased with the preparation and the conduction of the workshops. They found the topic interesting to explore which resulted in fruitful and long-lasting discussions about several skills and also how they could be addressed more thoroughly.