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# Escape to Stay - make VET your first choice

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Intellectual Output 1

## National Report Germany

### Preparation for White Paper

"What makes vocational training attractive?" - Improving the image of VET with effective educational Escape rooms

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## 1) Introduction: What are we talking about? Why Escape rooms for vocational orientation?

The German Federal Institute for Vocational Education and Training (BIBB) defines **career guidance** as a "process with two sides: On the one hand, there are young people who orient themselves and learn about their own interests, competences and goals. On the other side are the requirements of the world of work towards which young people are oriented. Both sides have to be reconciled again and again. Career guidance services support young people in mastering this process." Career orientation is understood as a longer process that takes place within the socialisation of young people. It should not only be understood as a necessary for the transition from school to vocational training or university, but it can also be necessary at later stages of interruptions and changes.

An **Escape Room** is a relatively recent entertainment phenomenon that became popular worldwide in the early 2010s and can now be found in many cities. Usually an Escape Room is played in a small team (4-8 players) over the duration of one hour, although there are also Escape Rooms for even more players or with a different time limit. The team is "locked in" and must solve puzzles in the allotted time to Escape the room. The game is embedded in an overarching narrative with a core objective (see Project School Break 2019 – 2021). Le, Weber & Ebner (2013) pointed out the common ambivalent expectations of gamification approaches, which are also to be considered for the subsequent project activities: Games of this kind should enable open-ended exploration, but should also follow a set plan, contain complex learning content, that is not too costly to produce, keep participants motivated for as long as possible, but do not neglect the learning content in the process and offer fun, but also convey learning content.

For answering the question of why Escape Rooms for vocational guidance, we always come back to the same **challenges for employers in the context of a growing demand of skilled workers**:

- 1) Demographic change: Fewer potential trainees are available to the companies, which intensifies competition for good trainees. This can be seen for example in the development of school leavers - in other words, the basic population that is then distributed among the four sectors: From 929,500 in 2009, the number of school leavers fell to 812,200 in 2018 (BMBF 2020).
- 2) Mismatch: According to statistics of the Federal Employment Agency (FAE), the number of unfilled training positions declined at the end of the training year in 2019. Thus, at the end of September 2019, 53,100 positions were still unfilled (BMBF 2020). One explanation therefore can be misconceptions about VET resulting from expectations of beginners towards their apprenticeship position and their employer.
- 3) Proportion of women in in-company training: According to BMBF (2020) the proportion of women among apprentices in the dual system declined slightly to 36.8% in 2019 compared to 41% in 2002. The numbers of registered applicants make us even more perceptive: In 2019, there were also significantly more men (313,044) than women (198,742) registered with the Federal employment agencies as applicants for apprenticeships. It has been argued that women are more likely than average to opt for occupations that tend to be rated less highly or choose something else, even

though these do not necessarily belong to their desired occupations - also because companies often still make their selections according to traditional role models. As a result, young women are showing less and less interest in dual training. It is therefore necessary to create framework conditions for young women to have access to a broader range of occupations.

- 4) Rates of early leaving from VET (ELET) / number of trainees drop-outs: “The contract dissolution rate shows the number of early leavers during apprenticeship training. 151.665 of apprenticeship contracts (26,5 %) were dissolved in 2018. The dissolution rate among females is slightly higher than among males.” (cited from CEDEFOP 2017). The provision of vocational orientation and counselling is mentioned as a main element for a successful dual VET system.

Improving the image of VET and attracting new students to it is a priority in this project. We identified vocational orientation and guidance as necessary bridge between school and work. In this context the project seeks to use Escape Rooms to gain the students attention and provide convincing experiences to enhance their learning about the world of work. Two kind of players seem to play a great role in vocational guidance: in Germany vocational orientation is institutionalized, basically the Chambers, the Federal employment agencies and the general schools act as main players. However, also training companies can contribute to this task by organizing appealing practical vocational orientation closely oriented towards their needs but most of all to the students’ reality.

## 2) Data collection: How was the research performed in terms of procedure, participants etc.?

For the desk research part one and two a number of papers and documents were screened, collected and sorted in a table according to the different questions of this National Report. Afterwards the collected stock of sources or parts of them were read and main arguments compiled. While some sources contained quite recent data, other dated back a few years ago. Still, they are considered relevant due to their release by official, national bodies, such as the Federal Institute for Vocational Education and Training (BiBB).

With regards to the focus group approach, two groups met online for about 90 minutes at two different days. Altogether thirteen participants took part and were accompanied by three staff members of IHK-Projektgesellschaft. The participants were mainly acquired by e-mail or telephone. Here we payed attention to inviting persons representing different sectors All participants received a briefing letter beforehand, explaining the assumptions for our project approach (What are Escape Rooms for us? What is achievable with the game-based approach, what is not? Whom do we consider as our target groups?), key questions that would guide the focus group discussions and providing background information on the other participants. One staff member of IHK-PG moderated the discussion and took notes, a second person presented the core questions PPT slides during the meetings. The online meetings have been recorded, but due to technical problems the sound was missing for a major part of the recordings. Hence, the protocol (see chapter four) was created with the notes taken.

### 3) Findings Desk research – Part 1: Vocational orientation and guidance

#### 3.1 Short overview about VET, acceptance of VET (numbers) and which professions are in demand in general, and in particular of technical and ICT professions?

When talking about VET we basically mean vocational orientation and training after lower secondary level that leads to a first qualifying degree at EQF level 3 or 4. The following data are taken from the Vocational Training Report 2020, released by the Federal Institute for Vocational Education and Training (BMBF 2020). Accordingly, vocational training traditionally represents the largest sector. It comprises all fully qualifying vocational training programs. This includes dual training in accordance with the Vocational Training Act (BbIG) and the Crafts Code (HWO) as well as school-based vocational training and civil service training for the intermediate civil service. The number of beginners in this sector totalled 730,260 in 2019 (including 47.4% women), which make up around 37% of all starting students after leaving lower secondary school. The sub-sector of dual training accounts for 67.4% of all beginners in the vocational training:

**Table 1:** Beginners after lower secondary school in 2019 (BMBF 2020)

Beginners	Absolut	Percentage
Total beginners	1.986.564	100%
A) Vocational training	730.260	36,8%
-> thereof dual vocational training	492.276	67,4%
-> thereof school-based vocational training	186.048	25,5%
-> thereof other school-based training ie. civil service training	51.939	7,1%
B) Measures in the transitional area (ie. acquisition of training maturity, bridging of unemployment, catch up school-leaving certificate)	255.282	12,9%
C) Acquisition of the university entrance qualification (typically school-based)	486.261	24,5%
D) University entrance	511.761	25,8%

The last two sectors, showing the number of students acquiring their university entrance qualification and first-year students at universities, shows quite a high number, reveal one of the challenges of companies which is the competition for new junior staff. This can be solved by training own staff, for example with dual training (apprenticeships). This training form is widely accepted in Germany from the companies' perspective, because it holds several advantages for them (IHK Duesseldorf 2021):

- 1) Productivity of apprentices: The talents of apprentices already come into play during their training. In many cases, apprentices generate more revenue than they cost. In addition, young trainees bring fresh ideas and the impetus of a new generation to the company.

- 2) Access to qualified specialists: Even today, qualified skilled workers are hard to come by. Those who train prepare the next generation very specifically for the tasks in the company.
- 3) Lower training costs: Finding, training and qualifying skilled workers is time-consuming and expensive. Those who train themselves save time and money.
- 4) Fewer miscasts: Companies get to know their trainees very well in two to three and a half years: Time enough to check motivation and suitability. Expensive miscasts are much rarer than when hiring external specialists.
- 5) Employee identification: Training leads to higher identification of all employees with their company.
- 6) Image benefits: The reputation as a training company improves the image of the company.

On the other hand, dual training is also accepted by potential students, with some restrictions as described in chapter 3.2. Looking at developments on the German labor market according to qualification levels, it can be seen, that skilled workers with completed vocational training continue to represent the largest group on the labour market (KOFA 2019). Among these skilled workers that, on the one hand, the number of unemployed has been falling steadily for years and has been falling steadily for years and that the number of the number of registered vacancies has been rising steadily rising.

### **Shortage of skilled workers - bottleneck occupations**

Companies understand dual training as a way to secure their human resources. However, some are struggling more than others and need to be more active in attracting new junior staff due to a shortage of skilled workers.

Although there is no nationwide shortage of skilled workers across all occupations and regions, the shortages of skilled workers in some occupations have become more entrenched and are now affecting the whole of Germany (KOFA 2019). In this context, it is often spoken of bottleneck occupations<sup>1</sup>.

Occupations in the skilled trades, the metal and electrical industries, and the STEM fields are particularly affected. In addition, some healthcare occupations, such as geriatric care, have also been among the bottleneck occupations for a very long time and are experiencing a nationwide shortage of skilled workers (BMWV 2021).

One reason for the worsening situation on the labour market is demographic change and the associated aging of the labour force potential, as has been described above. It is precisely skilled workers with completed vocational training who are most frequently in short supply. The areas particularly affected by shortages of skilled workers include:

- Academic occupational groups in the fields of medicine, engineering in mechanical and automotive engineering, electrical engineering, IT and software development and programming.
- Skilled trades: electrical installation and assembly, machining technology, plastics processing, pipeline construction, welding technology, mechanical engineering.
- Care: health care, nursing and care for the elderly.

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<sup>1</sup> Bottleneck occupations are these occupations, there are fewer than 200 unemployed persons for every 100 vacancies registered with the FEA.

Regarding skilled workers the following graphic (IW Koeln 2020) shows bottleneck occupations:

**Table 2:** Top-10 occupations by skills gap per level, Skill gap and unemployed persons per 100 registered vacancies, moving annual average as of 30.06.2020, source:

Level	Professional subgroup	Skilled labour gap (absolute numbers)	Unemployed per 100 jobs registered
Skilled workers	Elderly care	20.282	20
	Building electrics	15.595	27
	Health and nursing care	13.614	35
	Plumbing, heating and air-conditioning technology	11.462	33
	Automotive technology	10.654	64
	Child care and education	10.391	88
	Electrical operating technology	8.936	32
	Professional driver (freight transport)	6.095	128
	Mechatronics	5.343	28
	Mechanical and industrial engineering	4.922	75

Level	Professional subgroup	Skilled labour gap (absolute numbers)	Unemployed per 100 jobs registered
Specialists	Physiotherapy	8.940.	34
	Occupational therapy	3.437	47
	Supervision - Electrical engineering	1.777	47
	Management - medical, orthopedic and rehabilitation technology	1.750	31
	Public administration	1.509	53
	Leadership - automotive, aerospace and shipbuilding engineering	1.424	79
	Speech therapy	1.358	37
	Electrical engineering	1.154	50
	Supervision - building construction	1.078	70
	Supervision - personal care	880	100

Skilled labour bottlenecks are predominantly found in gender-typical occupations, i.e., occupations that are predominantly performed by women or men. In contrast, there are no bottlenecks in occupations that are among the top 10 training occupations for boys and girls alike. It is therefore important to overcome gender stereotypes as early as the vocational orientation stage.

Many young people base their career choice on later employment opportunities. It is therefore important to highlight the optimal employment prospects and the low risk of unemployment in bottleneck occupations.

### **3.2 Short overview about advantages of VET compared to other educational pathways? “Fun” part of VET pathway? Misconceptions about VET? Professions in the technical and ICT sector which are not perceived as very attractive and why?**

#### **Factors influencing career choice<sup>2</sup>**

An analysis by BMBF (2020) was able to identify factors that play a major role in the decision of young people for or against a particular occupation to get trained in. The most important characteristic, cited by around 70% of young people, is the labour market opportunities that an occupation promises. Equally important to the majority of them is the opportunity to pursue a career, work with other people and contribute their own ideas. The desire for as much free time as possible and a high income are still considered important by over 40% of the young people surveyed. While the factors mentioned play a similarly important role for both genders, there are gender-specific differences in the questions about whether one would like to help others in one's job or whether one would like to work with technology in one's professional life. While more than half of young women answer the former question with yes (young men only 28%), the gender distribution is reversed for the latter question. Working with technology is important to 44% of young men, but only 23% of young women.

Just under half of the young people are reluctant to work in occupations that offer little variety in activities and in which they are strongly confronted with illnesses, with the latter having a more deterrent effect on male young people (54%) than on female young people (39%). An opposite gender preference is found in dealing with noise, which a total of 39% of the young people surveyed want to avoid, including 32% of young men and 49% of women. Factors often associated with skilled trades ("physical exertion" at 17% or "getting dirty" at 16%) are seen as negative by only a minority of young people. In addition, however, the structure of vocational guidance used has also changed considerably in recent years. Regardless of the institutional orientation services, young people are increasingly using other agencies and means. In addition to their own parents and friends, who have always played a certain role, the relevance of job fairs and also social networks has increased.

#### **(Mis)perceptions about dual training or some occupations**

In her doctorate thesis, Stephanie Matthes (2019) researched reasons, why young people (of the 9<sup>th</sup> and 10<sup>th</sup> grade in her study) explicitly do not choose an apprenticeship programme. She found the following factors:

- 1) the expectation, that the framework conditions of a particular occupation (remuneration, working hours etc.) do not match one's own objectives ("lack of fit to framework conditions").
- 2) the fear that a certain career choice could lead to negative reactions in one's social environment ("lack of social fit"). The results of the empirical study indicate that both factors are closely linked to each other.
- 3) the expectation of a "lack of realizability" and a "lack of certainty in judgment": " If young people assume that their chances of accessing a particular occupation are not good or if they assess their occupational knowledge as not good and are thus uncertain in their judgment of the occupation

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<sup>2</sup> More information on this topic can be found in BMBF 2014.

in question, this has a negative effect on their inclination and can lead to the exclusion of occupations, even if there is actually an occupational fit.”

It is also worth to have a look at reasons for apprentices to quit their training contract with the company. According to an analysis of data from the National Education Panel (cited in BMBF 2020), in 31% of the cases the contract dissolution was initiated by the company, and 29% of the respondents indicated that the contract dissolution was by mutual agreement. In almost half of the cases (48%), the trainee dissolved the contract unilaterally. The main motives for dissolution by trainees were a misconception about the occupation (almost 60% of respondents), conflicts (about half of respondents) and the training being too low standard (39%). It is therefore clear that one factor in reducing the number of contract terminations must be better preparation for the choice of occupation.

### Professions in the technical and ICT sector not perceived as very attractive

It is becoming increasingly difficult to find suitable young people for industrial-technical apprenticeships. The study "Azubi-Recruiting Trends 2019" (see Haufe Online Redaktion 2019) looked into the reasons why young people decide against these professions and gives tips for making training more attractive.

A prerequisite for a good performance in the overall assessment were consistently good ratings in all four aspects of training quality considered in the context of the Report, i.e. the occupations mentioned scored above average both in the assessment of training periods and training allowances and in the assessment of the technical quality of in-company training as well as the personal assessment of training.

**Table 3:** Overall ratings of trainees by training occupation

Professions with the best ratings	Occupations with the worst ratings
Industrial mechanic Administrative assistant Mechatronics technician Electronics technician for industrial engineering	Painters and varnishers Salesman Plant mechanic sanitation, heating, air conditioning Dental assistant
Occupations with medium ratings	1) Trainees lack interest in industrial-technical occupations: Two-thirds of the respondents who do not do industrial training simply state that they are not interested in these occupations. Another 18 per cent are of the opinion that these occupations are "too physically demanding". 17 percent decided against such training because of the "unattractive working environment". 2) There are also young people who appreciate the good prospects for the future. Among the young
Industrial clerk IT specialist Cutting machine operator Office management assistant Electronics technician Warehouse logistics specialist Medical assistant Tax clerk Automotive mechatronics technician Carpenter Warehouse clerk Etc.	

people who opted for industrial training, "technical interest" was the most frequently cited reason for choosing an occupation, at almost 80 per cent. For about 58 percent, the good future prospects were a reason for deciding on industrial training.

- 3) The payment seems bad to many - wrongly: A look at the free text field entries of the young people shows another exciting aspect: Here, one reason often mentioned is the "bad payment". This is surprising because training allowances in metal and electrical occupations tend to be above average.

The study also give recommendations for action to companies and schools to ensure more interest in industrial-technical apprenticeships, which should be taken into consideration for developing the Escape room settings during the project:

- 1) Arouse interest: In order to make industrial apprenticeships more attractive to young people, schools and companies must arouse interest in technical contexts, for example through subjects such as "technology" or practical projects.
- 2) Introduce professions: Many industrial-technical professions are simply unknown and need to be made known to young people.
- 3) Show prospects: It is important that employers show the future prospects of these occupations and make it clear that trained professionals will still be in demand in ten or 20 years. Who wants to learn a profession where they have to fear that they will be replaced by fellow robots in the next few years?
- 4) Transparent remuneration: There must also be more transparency in training remuneration and salary prospects.

### **3.3 Common understanding/national definition of vocational guidance and orientation?**

As presented in the introduction, the German Federal Institute for Vocational Education and Training (BiBB) defines career guidance as a "process with two sides: On the one hand, there are young people who orient themselves and learn about their own interests, competences and goals. On the other side are the requirements of the world of work towards which young people are oriented. Both sides have to be reconciled again and again. Career guidance services support young people in mastering this process."

Academics at BiBB (Eberhard, Granato & Herzer et. Al. 2019) researched the problems of matching young people looking for a training place (apprenticeships) and companies offering training places. They found out that additionally to the demand of training programmes of higher quality, vocational (career) guidance must be further strengthened. In particular vocation orientation practitioners' most urgent tasks should be:

- To reflect critically on the influence of prestige on the choice of occupation together with young people
- To involve the social and family environment of the young people much more

- To develop training market skills of young people choosing an occupation: In order for students to develop more realistic ideas about the training market and training occupations, knowledge about the training market must be increasingly embedded in career guidance.

This indicates a need of embedding the planned Escape room settings in a broader process of vocational guidance, where Escape room settings can be a first step, but needs to be complemented with further information delivery.

### **3.3 National and/or regional policy on vocational orientation and guidance (or career guidance)**

In Germany vocational orientation is embedded in programmes for career guidance that covers both, vocational and study orientation – as one assumes that many different types of target groups plus many different opportunities to enter the labour market require a broad guiding concept.

First of all, measures for vocational orientation are regulated by the school laws of the Länder (Federal states). Hence, procedures for competence assessment and individual support are fixed components of general school curricula for vocational orientation.

Secondly, vocational and study orientation is a social task entrusted also to the Federal Employment Agency (level of Federal government). According to § 33 SGB III (Social security Code), the employment agencies have to provide career guidance to prepare young people and adults for their career choice and to inform those seeking training. In doing so, the agencies are to "provide comprehensive information and advice on questions of career choice, on occupations and their requirements and prospects, on the paths and promotion of vocational education and training, and on developments of vocational significance in companies, administrations and on the labour market".

The national vocational orientation programmes are also based on the Framework agreement between the Federal Employment Agency and the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder (KMK) on cooperation between schools and career guidance" from 2017. It describes the core objective of vocational guidance: "... the promotion of the individual competences of pupils to shape the transition from school to work or to school-based or dual training or study. To this end, pupils should be enabled to successfully go through their individual process of career and study orientation in order to be able to make an informed and autonomous career choice decision." (cited from KMK 2017).

To aid this the Federal government – specifically the Federal Ministry of Education and Research – runs for example one programme for the "Promotion of vocational orientation in inter-company and comparable vocational training centres" since 2008. Grants amounting to around 600 million euros have been approved until May 2019. This means that more than 1.5 million pupils have been reached between 2008 and summer 2020. More than 300 educational institutions with more than 3,000 schools were involved in the programme as cooperation partners nationwide.

### 3.4 Target groups of vocational guidance (for VET)? To which educational level can they be assigned?

The first target group for vocational orientation are usually **students at general and vocational schools** in the last 3 school years. At general schools vocational orientation starts at grade 7, when students are 13/14 years old, and is continued until grade 10. At vocational schools orientation takes place at EQF level 1 and 2, that mainly cover training activities for vocational training preparation and basic vocational education. At this stage young people have the opportunity to find out which of their strengths match which occupation and also acquire the necessary knowledge and maturity to start a certified vocational training programme.

A second target group are **young people with a migration background**. Vocational orientation aims at integrating them into the training systems and/or labour market as quickly as possible. The Federal Ministry of Education and Research and the Federal Employment Agency offer and finance regular vocational orientation programmes specified to the needs for this target group. They can be assigned to EQF level 1 to 4, i.e. level 4 if they have a vocational degree as skilled worker but cannot, do not want to work in their field or are needed in another training field.

The trend towards higher education qualifications is unbroken. For several years now, the number of new students entering university each year has exceeded or equals the number of those starting dual training. Parallel to this, the number of higher education dropouts is rising. That is why also grammar schools are to provide structured vocational guidance, which is not compulsory in all federal states of Germany. Especially **students planning to leave grammar school after the 10th grade = EQF level 3**, but also **A-level graduates = EGF level 4** make up the third target group of vocational orientation (compare BMBF portal on DQR 2021).

### 3.5 Responsible actors in vocational guidance and orientation; other actors who could benefit from the projects' Escape room settings? How could they benefit?

From an informal perspective, parents are typical actors when it comes to vocational orientation (compare Bildungsketten-Werkstatt 2013/2021). Numerous studies indicate that the opinion of parents counts together with recommendations from friends, relatives, teachers or career counsellors. It is also assumed that the motivation of young people for proactive career orientation can be increased through parental work. Thus, the project Escape2Stay should consider getting parents on board, too, for example by informing them about the Escape rooms that will be developed throughout the project lifetime.

From a formal perspective general schools are considered to be the central place for the early vocational orientation of young people. Thus, typical stakeholders within the schools are the school management, teachers, special education teachers, school social workers and classmates.

Apart from schools there are the following further partners that play a major role for vocational and study orientation:

- Career counselling service of the regional employment agencies,

- (Training) companies,
- Higher education institutions,
- Chambers of industry and commerce and chambers of crafts,
- Social institutions with social workers, work coaches, career entry guides or volunteer mentors
- Associations and authorities, ie. specialized (funded) regional networks, ie. <https://www.netzwerkzukunft.de/>,
- Private VET providers: inter-company and comparable vocational training centres
- Managers of specialized online platforms for vocational guidance, for example kobra.net or ueberaus.de.

### **3.6 Existing national services and practices for vocational guidance? Also activities of companies to attract students to VET programmes.**

As described above vocational and study orientation is a shared task of the Federal government and the Länder (Federal states with sovereignty in education).

First of all, every student benefits from measures of vocational guidance as they are part of the general school curriculum (at least grade 7 to 10) at every school. These measures usually include competency assessments, internships (of 2 to 3 weeks) each school year and specific lessons on career choice, application procedures etc. More than 3000 schools nationwide also organize places for students in the vocational orientation program (Berufsorientierungsprogramm BOP) of the Federal Ministry of Education and Research (BMBF).

Apart from these formal, given measures at school, each student can choose from a variety of information services provided by different key players:

- Training companies, represented by the Chambers of Crafts, Chamber of Commerce (IHK) etc.: some run special projects ie. “Perfect fit” (Passgenaue Besetzung with the aim to match companies and trainees) at our regional IHK Ostbrandenburg offered by its training centre IHK-Projektgesellschaft. Since 2020 several chambers manage virtual and free of charge “trainee getting to know platforms”, where potential apprentices and companies can arrange online appointments to get to know each other.
- Training companies themselves, organizing open days, internships, advisory meetings, stands at fairs or cooperative projects with general schools
- Federal Employment Agency: students can use their local vocational information centers (Berufsinformationszentrum, BIZ) where they find contact persons for questions and a wide range of media available.
- Providers of youth vocational assistance (Träger der Jugendberufshilfe), such as Caritas, municipal associations etc.: they accompany young people (primarily disadvantaged and impaired young people) up to the age of 25 in the transition from school to training and employment with different measures as consultation hours, vocational guidance seminars, workshops etc.

As presented above, there are numerous support services and measures that accompany students in their career orientation process. These offerings are primarily on-site offerings that cannot currently be implemented to the extent planned due to the measures to contain the Corona pandemic. The restriction of on-site offerings motivated the BMBF to provide several digital sources to inform oneself.<sup>3</sup>

### **3.7 Problems analysis: outline of specific problems vocational guidance practitioners face? Data about whether their work is successful? If not, why not – what are obstacles?**

Druckrey (2017) states that despite the fact that there is now such a large, dense network for vocational orientation in Germany, young people still seem to get lost at the transition from school to work, feel poorly oriented and are at a loss to answer questions about their professional future. At the same time, social and technical developments are advancing massively. In this context she identifies 4 major trends, that all have a direct impact on the development of the vocational guidance: the consequences of demographic change, questions of securing skilled workers, refugee migration and digitization.

According to Druckrey there are numerous programs and initiatives to guide young people with a migration background. However, the author sees the need to coordinate them, to quickly publicize good examples nationwide and to continue to work intensively on solutions to integrate this target group. Further to that challenges exist in terms of imparting necessary knowledge and skills to adolescents and young adults who will only be in the general education system for a limited time, taking into account the different prerequisites of the participants and making an initial assessment of existing competencies and interests in order to allocate suitable, individual offers.

Another challenge relates to the necessary qualification and expertise of actors in vocational guidance. Specific training programs are required, that take into account school and teaching challenges with which vocational guidance practitioners are entrusted in each case. They are in need of extended competences in terms of counselling and coaching for young people with a migration background, parental work, planning of classroom projects at various learning sites, cooperation with companies, use of digital learning offerings and online applications for vocational guidance as well as vocational education 4.0.

After studying the Specialist portal for transitions to education and employment (Fachstelle Ueberaus 2021) of the German Federal Institute for Vocational Education and Training (BiBB) certain transversal topics have been identified, that seem to be challenging, yet important for vocational guidance practitioners: parent work, inclusion, vocational guidance specifically for refugees and a greater diversity in career choice skills among young people.

## **4) Findings Desk research – Part 2: Escape rooms for educational purposes**

**4.1 State of play of Escape rooms for education in general: in which educational sectors (general education, VET, higher education etc.) are they applied already? If nothing is to be found on Escape rooms, try with Escape games. Which purposes do they have? Are there key**

<sup>3</sup> This offer can be found here: <https://www.berufsorientierungsprogramm.de/digital-gestalten>.

## aspects they focus on? Are there any projects or initiatives on Escape rooms/games for education?

The learning potential of Escape rooms has been quickly recognized by educators of all educational sectors. Hence, during the last 3 years many educational Escape rooms have been created across all educational sectors.

In schools this type of learning intervention is commonly known as “Breakouts”. In a school context Escape games are said (see Project School Break 2019 – 2021) to foster different transversal or soft skill, in particular social skills, problem solving skills, resilience, thinking out of the box, time management and commitment. Apart from these transversal skills, Escape Rooms offer a high potential for initiating subject-specific learning. The mechanics of Escape Rooms are based on puzzles, tasks, quizzes, etc., so it is somehow natural to integrate content elements into a game. Each step of an Escape Room can be designed to stimulate or test specific knowledge or skills, making it an effective learning venue for subject-specific content as well. The number of break out games for an improved media competence of students indicates that this is a common topic for applying edu breakouts. But they are also used to deliver knowledge on other subjects, such as history, geography<sup>4</sup> or nutrition<sup>5</sup>. Usually edu breakouts involve a certain breakout setting, subject related riddles, a restricted time frame (one lessons) and a reflection session afterwards.

At universities Escape rooms are applied as type of learning environment, adding a new way of exploring to traditional learning concepts. For example, at Ruhr University (Bochum)<sup>6</sup> they opened an Escape Room that serves as research and learning laboratory for entrepreneurship education. At TU Braunschweig<sup>7</sup> students get “locked” into the Math Puzzles Room of the Institute of Analysis and Algebra and have 60 minutes to solve riddle on linear algebra. The room does not serve as exam but helps students to self-reflect on their learning state.

### 4.2 State of play for Escape rooms for vocational orientation: are they offered at different educational levels (general education, VET, higher education etc.)? Anything particular offered in VET? Are there any projects or initiatives on Escape rooms/games for vocational orientation?

It is striking that both Escape games and the gamification approach are used for vocational orientation. Especially at Bavarian grammar schools, the scenario of Escape games is offered as a “P-Seminar”<sup>8</sup>. Various subjects, such as mathematics, physics and biology, are thus presented in a more interesting way and used for career orientation.

<sup>4</sup> Example Escape Room at school on Climate change: <http://www.Escape-climate-change.de/das-spiel.html>, retrieved 01/03/2021

<sup>5</sup> Example: <https://dariaburger.net/s/9YGip73XyWf4jct>, retrieved 01/03/2021

<sup>6</sup> See: [http://www.apf.ruhr-uni-bochum.de/aup/forschung/projekte/think\\_space.html.de](http://www.apf.ruhr-uni-bochum.de/aup/forschung/projekte/think_space.html.de), retrieved 01/03/2021

<sup>7</sup> See: <https://magazin.tu-braunschweig.de/m-post/Escape-the-matrix/>, retrieved 01/03/2021

<sup>8</sup> See: [https://www.gymnasium-pegnitz.de/wp-content/uploads/oberstufe/P-Sem\\_M\\_Kramer\\_Escape-Room\\_Kurzbeschreibung.pdf](https://www.gymnasium-pegnitz.de/wp-content/uploads/oberstufe/P-Sem_M_Kramer_Escape-Room_Kurzbeschreibung.pdf), 01/03/21

Companies use Escape Rooms to find suitable applicants, for example the Federal Police<sup>9</sup> or a trade fair with several companies<sup>10</sup>.

There have also been several projects, such as an orientation workshop with the University of Trier<sup>11</sup> or a career orientation fair in 2019. Escape rooms and the gamification approach is not new and is continuously developed by a school or company and used for career orientation.

In a vocational context, TalentHEro, for example, has developed a training app that has implemented a digital festival. Instead of trade fair stands, students can find out which profession really suits them at the companies' activity areas. Will the young people be able to free themselves from the Deutsche Bank Escape Room with analytical thinking, overcome the UPS course with skill or identify all the faults in the car provided by Vergölst with testing equipment?

#### **4.3 Gaming modes: are there online and offline (classroom) versions? Any preferences or described experiences to prefer one mode over the other?**

The game modes in classrooms are mostly offline. There is at least one person (teacher, trainer) who observes the game. Afterwards, the person evaluates the game with the pupils. Interested persons and the accompanying staff are the observers and evaluate with the pupils afterwards.

According to School Break Handbook (see Project School Break 2019 – 2021), it is technically possible that Escape rooms will be entirely analog, using physical technologies such as magnets, padlocks, mechanical locks and keys. However, many are hybrid, using digital locks, tools such as laser-pointers and UV lights, or mobile devices or augmented reality as part of the experience. Some games, such as the single-player Escape rooms, are played in a fully digital environment. There are new models of VR multiplayer Escape rooms that are played face-to-face, but there seem to be no examples of remote multiplayer learning Escape rooms.

#### **4.4 Ideas for possible storylines that guides students through the Escape game - titles and key story**

Nicholson (2015) found the following typical narratives for Escape rooms in his survey:

Overall Escape a Specific Unpleasant Place (Dungeon, Prison, Preschool, etc.) - 30%

Abstract: There is no overarching narrative other than "Escape the Room" - 16%

Investigate a Crime or Mystery - 9%

Engage with the supernatural - 8%

Solve the Murder - 5%

Defuse the explosive device - 5%

Be an Adventurer- 4%

<sup>9</sup> See: <https://www.komm-zur-bundespolizei.de/blog/hast-du-das-zeug-fuer-das-cleverteam-die-Escape-room-roadshow-rollt-im-oktober>, 01/03/21

<sup>10</sup> See: <https://crosswater-job-guide.com/archives/77103/erstes-azubi-festival-im-gamification-stil-in-muenchen-berufsorientierung-geilgemacht/>, 01/03/21

<sup>11</sup> See: [https://www.uni-trier.de/index.php?id=14187&no\\_cache=1&tx\\_news\\_pi1%5Bnews%5D=18076&tx\\_news\\_pi1%5Bcontroller%5D=News&tx\\_news\\_pi1%5Baction%5D=detail&cHash=2f187748555eaa18737b90da2197e71a](https://www.uni-trier.de/index.php?id=14187&no_cache=1&tx_news_pi1%5Bnews%5D=18076&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=2f187748555eaa18737b90da2197e71a), 01/03/21

- Gather Intelligence or Espionage - 4%
- Carry out a Heist - 4%
- Find the Missing Person - 3%
- Help Create Something (such as a cure, a potion, etc.)- 2%
- Military Operations - 2%
- Free another person or animal - 2%
- Survive! - 1%
- Carry out an Assassination - 0%

Importantly he pointed out to keep in mind engaging both male and female players, according to the following gender preferences:

	<b>Females are more interested in this room.</b>	<b>Males and females are equally interested</b>	<b>Males are more interested in this room.</b>
Military Operations	0%	60%	40%
Defuse the explosive device	18%	64%	18%
Free another person or animal	25%	75%	0%
Abstract: There is no overarching narrative other than "Escape the Room"	16%	76%	8%
Escape a Specific Unpleasant Place (Dungeon, Prison, Preschool, etc.)	4%	78%	18%
Engage with the supernatural	0%	80%	20%
Solve the Murder	0%	83%	17%
Find the Missing Person	0%	86%	14%
Carry out a Heist	13%	88%	0%

**Table 8. Concepts/Narratives for escape rooms where there was a gender preference**

Other examples can be:

- Orientation workshop: "Attention! Decontamination" is written on the sign on the classroom door. In the room, the eleventh graders scurry back and forth at different stations. It is a race against time. By solving various tasks, they obtain a code with which they can free themselves from Dr Chaos' decontamination-prone laboratory.
- Federal Police: "A passenger overhears another passenger's phone call on the train. And what he hears is extremely disturbing. The passenger manages to photograph the suspect from behind. When the train reaches the next station, he immediately reports to the federal police. Now you come into play: will you succeed in identifying the suspect and preventing the crime?"
- A person is missing. To help the desperate, panicked parents, a friend called the people from the surrounding area together: Please come here! We need your experiences and your ideas! Can you find out where the person is? Right now the apartment is empty. You have one hour to search the persons' room for clues and can thus clarify what happened!

#### 4.5 Suggestions for riddles/puzzles/mini activities to Escape the room: short description and solution incl. necessary materials and tools for riddles to Escape, supplementary documents if necessary, integration of digital tools (only naming, not too detailed)

With regards to riddles that facilitate the gamification approach, we found an interesting source: Nicholson (2015) researched 175 (profit oriented) Escape rooms and evaluated their facilities. His findings can be of interest for the Escape2Stay Escape room settings. He identified the following common types of puzzles:

Searching for physical objects hidden in the room - 78%	Mirrors - 26%
Team Communication - 58%	Abstract logic (such as Sudoku) - 22%
Light - 54%	Research using information sources - 20%
Counting - 53%	Strategic thinking (such as Chess) - 20%
Noticing something "obvious" in the room - 49%	Hand--eye Coordination (such as shooting a target) - 17%
Symbol substitution with a Key (such as looking symbols up in a book) - 47%	Rope or chains (such as undoing complex knots) - 16%
Using something in an unusual way (Out--of--the--box thinking) - 47%	Traditional Word Puzzles (such as crosswords or word search) - 14%
Searching for objects in images - 43%	Mazes - 14%
Assembly of a Physical object (such as a jigsaw puzzle) - 40%	Physical Agility (such as a lasermaze) - 13%
Algebra and other Mathematics - 39%	Touch - 12%
Pattern identification (such as visualizing a shape in a set of dots) - 38%	Knowledge of facts not provided in the room - 11%
Riddles - 37% (in words)	Shape manipulation (such as a matchstick puzzle) - 11%
Ciphers without a Key (such as letter substitution) - 35%	Liquids - 9%
Hearing - 26%	

Annex 1 lists some online source on Escape rooms, mainly applied in a school context. They contain descriptions, lists of necessary materials and types of puzzles for inspiration.

#### 4.6 Objects and decorative elements (relevant for mobile version)

Objectives and decorative elements are said to enhance the gaming/learning experience and create an atmosphere underpinning the Escape Room story. Specifically, disguises, for example of the game moderator or even the players, can add to an immersing effect. There are many different objects one can think of. Depending on the games' aim, objects and decorative elements will be adapted to specific professional fields. Medical professions could use equipment from a laboratory. Mechanical professions could use workshop equipment (screws, gears). Furthermore, an analogue and digital Escape scenario is possible from videos on Youtube, QR-codes to websites where a code can be entered.

Generally, a case will start with an introductory story, introductory video or door sign (example "Laboratory Dr. Ming") in order to involve participants directly into the story. General equipment could

be QR codes, PC and websites, Social Media profiles, Samples and test strips, Videos, Postcards, Pictures, Locks, Keys, PC cables, Printers, Barrier tape and many other.

#### 4.7 Definition of possible roles of participants (tinkerer, collector, coordinator etc.)

In edu breakouts for school classes it is sometimes advise to allocated different roles to different players - clue seeker, puzzle solver, lock picker - in order to avoid people doing everything altogether at the same time, thus creating chaos (Kroker 2019).

Also commercial Escape Room providers presented some findings on team building and role distribution in Escape Rooms, in particular for enterprise teambuilding events (EveryEscapeRoom 2020): without claiming representativeness, they firstly identified the boss/leader, which is supported by some studies (ie. R. Pan, H. Lo & Carman Neustaedter 2017) stating that “one or more players in the team took on a leadership role within the group”. Additionally they listed “the explorer” (driven by curiosity), “the thinker” (logical, analytical mind), “the mediator” (joins the group) and “the fun master” (eases the atmosphere with his jokes/funny comments).

Defining roles is a critical moment for the projects Escape room settings as it gives prejudices and stereotypes an easy entry into educators’ mind. However, when evaluating the Escape game activities afterwards it might be helpful for participants and supervisors to reflect on each others’ approach and behaviour. It might be interesting to include some facts about role in the Escape2Stay handbook.

#### 4.8 Safety and possible critical situations (what might happen – risk management)

Safety relates to Escape routes, first aid, a notification of participants on what happens in a case of emergency – basically everything related to fire protection requirements, which a company or VET provider usually has to take care of. There are no open wires, electricity, or anything else that could cause an injury. It is important to explain to every participant, that they are never really locked in or there are corresponding emergency openings. Each player can free himself at any time and Escape. It is conceivable to add one sub-chapter on safety to the Escape3Stay handbook for practitioners at a later stage.

### 5) Results of the Focus group

#### Information on the composition of the group

Time did not allow to collect more data on years of experiences of each participants and their concrete background. However, we collected the following information:

Role of participant	Name of the organisation/company	Type of organisation	Weblink
Shareholder	Die Traum-Schmiede gUG	Non-profit enterprise company (limited liability)	<a href="http://www.die-traum-schmiede.de/">www.die-traum-schmiede.de/</a>
Project manager	Zukunftszentrum Brandenburg	Project funded by Federal Ministry of Labor and Social Affairs and ESF, and the Federal State of Brandenburg	<a href="http://www.zukunftszentrum-brandenburg.de/kontakt-und-team-zukunftszentrum-brandenburg/">www.zukunftszentrum-brandenburg.de/kontakt-und-team-zukunftszentrum-brandenburg/</a>

Head of Marketing and Communication	ppg > holding GmbH / prepacgroup	Training company	<a href="http://www.prepacgroup.de">www.prepacgroup.de</a>
Training/Career Advisor Specialist department for securing skilled workers	IHK Ostbrandenburg	Chamber of Commerce and Industry	<a href="http://www.ihk-ostbrandenburg.de/zielgruppeneinstieg-azubis-und-ausbilder/besetzung-von-ausbildungsplaetzen-2380694">www.ihk-ostbrandenburg.de/zielgruppeneinstieg-azubis-und-ausbilder/besetzung-von-ausbildungsplaetzen-2380694</a>
Chief Operating Officer (COO) & Founder	Escape Academy Berlin	Private Escape Room provider	<a href="http://www.Escape-academy.de">www.Escape-academy.de</a>
Project officer "Perfect fit" (matching companies and apprentices)	IHK-Projektgesellschaft mbH	Training provider of Chamber of Commerce and Industry	<a href="http://www.ihk-projekt.de/">www.ihk-projekt.de/</a>
Master student Business Education and English	FAU-Erlangen-Nürnberg	University	
In-Company trainer	Endress+Hauser SE+Co. KG	Training company	<a href="http://www.ehjp.endress.com">www.ehjp.endress.com</a>
Practical Learning Advisor of the Coordination Office for Practical Learning	Netzwerk Zukunft. Schule und Wirtschaft für Brandenburg e.V.	Association funded by Federal State of Brandenburg and member fees	<a href="http://www.praxislernen.de/koordinierungsstelle/unserteam/">www.praxislernen.de/koordinierungsstelle/unserteam/</a>
Business Partner and Project Manager Perspective Development	Die Traum-Schmiede gUG	non-profit enterprise company (limited liability)	<a href="http://www.die-traum-schmiede.de/">www.die-traum-schmiede.de/</a>
Managing Director	BFI Tirol (AT)	Training provider	<a href="http://www.bfi.tirol/weiterbildung/ueberuns/team-bfi-tirol.html">www.bfi.tirol/weiterbildung/ueberuns/team-bfi-tirol.html</a>
Researcher and Regional Coordinator	Netzwerk Zukunft. Schule und Wirtschaft für Brandenburg e.V.	Association funded by Federal State of Brandenburg and member fees	<a href="http://www.netzwerkzukunft.de/ueberuns/unser-team/">www.netzwerkzukunft.de/ueberuns/unser-team/</a>
Researcher and Regional Coordinator	Netzwerk Zukunft. Schule und Wirtschaft für Brandenburg e.V.	Association funded by Federal State of Brandenburg and member fees	<a href="http://www.netzwerkzukunft.de/ueberuns/unser-team/">www.netzwerkzukunft.de/ueberuns/unser-team/</a>

### 5.1 Experiences with Escape rooms, i.e. for entertaining purposes, for pedagogical reasons, for vocational orientation

Some participants reported their first contacts with Escape Rooms (ER) happened in the form of private visits to commercial Escape Room providers.

They also explored this type of game as board game.

One participant used this approach in the teaching/learning context, for example at the Weinheim Education Fair as a low-threshold format for recognizing one's own strengths.

The company Traumschmiede: [www.die-traum-schmiede.de](http://www.die-traum-schmiede.de) reported two different forms, how they apply Escape Rooms:

- On career orientation: "HighSchool-Break-IN" and emergency in the xxx Corp are specially designed for the transition from school to an occupation, dealing with one's own strengths and interests. -> Materials on Google Drive, for internal use only
- "Create your own Escape Room": Participants develop their own Escape room or actionbound on a predetermined topic, thereby improving their planning skills and learning didactic basics.

The VET provider **BFI Tirol** developed an **Escape Room (ER) on Digital Skills**, looking at the self-perception of participants digital skills compared to their “real” digital skills. They pointed out the following characteristics:

- Escape Room for assessing one’s own digital skills, for matching self-image and external image,
- ER must be 100% error-free
- 7 test rounds until the completion of a version for public use
- different target groups, for example students and participants in vocational preparation
- support by option: max. 3 tips -> a moderator accompanies ER execution and fills out assessment sheets in form of a checklist
- all items to solve the riddles were glued with ER stickers (branding)
- story: Blackout worldwide to be prevented
- different digital hardware and software integrated: Alexa, printer, special glasses for reading messages on a manipulated screen, box with combination lock

The **University of Applied Management in Berlin** carried out a project: **MeQ:ino**: <http://meqino.de> with Escape Rooms being used as motivating factor for employees to discover digital learning. Interesting aspects (see also Annex 2):

- mobile Escape Room to introduce employees to and inspire employees to digital learning (arouse interest)
- experience of team character was important
- prerequisite: a room with tables and chairs, project staff visited the company and brought all ER material with them, they also set up the ER
- connecting real and digital tools
- aim: ER as a protected space for playful exploration and testing in order to reduce possible prejudices and fears about the use of the media.

The private ER provider in Berlin – **Escape Academy**: <https://Escape-academy.de/> offer mobile ER boxes for entertainment at home. Interesting aspects:

- offer: suitcases that are sent by post and sent back (multiple use) for indoor and outdoor use as well as small version of a DIY ER sent via e-mail for single use (could be bought by project to get inspirations – 4,90 EUR)
- boxes for beginners to professionals, beginner box: less distractions (misdirection, false trail), with increasing difficulty more encryption, more distractions or the same aids to use again for other tasks

## 5.2 Experiences in vocational guidance and attracting learners to VET programmes

Netzwerk Zukunft, Traumschmiede and IHK Ostbrandenburg have been offering formats for vocational guidance, specifically at apprenticeship fairs and at schools. Usually the consult students or closely cooperate with school teachers to provide information self-reflection, career opportunities, the labour market, self-assessments etc.

### 5.3 Goals of vocational guidance from what participants know, and target groups usually addressed with vocational guidance

Instead of this question we addressed possible objectives of Ers within the framework of vocational orientation and/or apprenticeship marketing.

The following possible objectives were defined on the basis of the requirements of the two focus groups. Enterprises expressed no. 2-4 as needs, while VET consultants and guidance networks were often also in favour of No 1: ER could be useful for ...

1. General vocational orientation:
  - recognising and mapping own strengths, weaknesses and inclinations before choosing a career,
  - empowerment: analysis of strengths and thus strengthening self-confidence,
  - discovering new perspectives for oneself and for self-reflection
  - choosing the right internship to get to know different occupational areas (not just one, but targeted, ER could help)
2. Presentation of the training company incl. employer branding; presenting the corporate culture and acquire new apprentices; first ER, then subsequent internship
3. Presentation of occupational fields or unknown occupations
4. Suitability of an applicant for a occupational field or profession – or in combination with No. 3 = mixture of involvement and competence assessment

From the participants answers' we could capture, what an ER should accomplish:

- reaching young people playfully at their level
- interface between vocational guidance by employment agency and school programmes for vocational guidance
- competitive spirit -> there must be a price that keeps up the motivation

As possible areas of application the following scenarios were identified:

- Girls' Day/ Boys' Day = Events in training companies
- Fairs (training fairs)
- Open Day in training companies
- vocational orientation events in schools

Asked about the age of students that ER should be targeting, participants identified different ages depending on the purpose:

For vocational guidance it is important to consider the school years students are at. Younger students need more guidance and reflection.

To support students in their career choice ER should be addressed to students of 8<sup>th</sup> and 9<sup>th</sup> class at the age of 13 – 15 years. Informing them in the 10<sup>th</sup> class would be too late, as they might have made their decision already.

Trauschmiede applies their ER concept for learners aged 17 – 27 years.

The training companies would target students aged 14 – 18/19, which are usually secondary school leavers, sometimes drop-outs from university (for example from microtechnology).

#### **5.4 Elements of VET, i.e. in participants' sector or in the technical and ICT sectors, that can be picked out as attractive elements or positive, exiting tasks that can arouse the interest in potential VET learners**

##### **Company perspective**

One participating company that manufactures flexible packaging with the inclusion of renewable raw materials faces the challenge of offering widely unknown training occupations (for example media technologist printing). The enterprise wants to show professional requirements with ER in a certain occupational field and, if necessary, also check the applicants' fit.

The suggested the following tasks, that could relate to less complex activities:

- collecting operational data
- applied the rule of three (calculate pallet assembly, for example when ordering goods)
- colorimetry

For the professional profession mechatronics engineer, the second company suggested tasks related to a HoloLens, small job-specific plants set up, work with equipment and tools and water cycles.

In terms of electrical engineering it could be conceivable to get students assemble simple circuit from small individual parts.

What is important is feeling to have done something yourself, that means to make the students experience self-efficacy. It could be also a good idea to create task packages in which requirements are cleverly packaged, for example one task package for one topic and/or for a series of different skills.

##### **Perspective of vocational guidance:**

For vocational guidance the following criteria for tasks/puzzles have been compiled:

- intuitive and exciting to try out and test
- showing basic tendencies of humans and are packed in puzzles
- little time consuming for preparation and installation
- low-threshold und entertaining
- illustrating self-efficacy
- better fewer puzzles but of good quality
- uniform look and simple
- incorporate factors that create stress
- take into account the reward factor at the end, for example a gift from the company or internship placement or an appointment for a apprenticeship interview
- proper context is important -> good story

Possible tasks identified:

- math exercises
- linguistic puzzles
- translation tasks DE <-> EN
- UV light puzzle
- logical thinking (birth dates included)
- logical mind games (things in relation to each other)
- haptic puzzles
- search puzzles

Online assessment test can be a good source of inspiration to create riddles.

With regards to the **suggested duration** for an ER, participants suggested:

- 60 min. according to trainingcompany
- 20 min. for ER on digital skills (experience of BFI Tirol)
- Meqino project: 45 min. for 4 tasks/ 30 min. for 3 tasks
- Escape Academy: 20 – 30 Min. per box
- duration depends on intensity of the game experience
- ER requires high concentration, therefore recommendation playing time approx. 30 - 40 min.
- Traumschmiede has good experiences with 45- to 60 for young people taking part to ER for becoming aware of own strengths; they should train to concentrate over a longer period of time.

There were also **suggestions for group size** collected:

- If there are several different tasks, a moderate group size with 1 to 2 people working on different tasks is suitable. This way it is visible, who is attracted to which type of task. All individual solutions together result in password to leave the room.
- For the digital ER a group size of approx. 4 people has been proven suitable.
- Staff of Meqino project reported good experiences with 5 - 7 participants. They also suggested to play the Escape game with different groups, one after the other to make it a challenge by finding out, who is the best group.
- Escape Academy suggested 8 - 10 participants for team building events, otherwise max. 6 pax due to group dynamics, otherwise 2 sub-teams will be formed.

## **5.5 Opinion on a mobile box that contains everything for Escape room settings and suggestions for equipment**

All focus group participants agreed on the feasibility of a mobile box that contains all equipment, decorative parts and tools necessary for the preparation and implementation of the Escape Room challenge. Together they collected criteria and possible content of the mobile box. In case of Escape Academy it was a suitcase:

- well implementable
- complete -> work with photos to check completeness at any time (before and after)
- it might contain extra components (for example of a PC) without any function in the game to distract players, thereby increasing the level of difficulty
- must be equipped in such a way that you can build ER on your own, for example at trade fairs as part of the exhibition stand or in schools (training fairs, visits) -> must be transportable by one person
- should include step-by-step handbook
- decoration depending on the story: for example door sign, barrier tape, quarantine sign etc., purpose of decoration: atmosphere and invitation to explore space, also decoration to distract: books, pictures that do not seem like tasks to make finding the puzzles more difficult
- disguises such as coats, hats etc.
- elements must be well reusable (stability)
- appealing optics and haptics
- accompanying audio if possible, see power point video from BFI Tirol as example
- paper-based game material and instructions for download on project website -> as Word-Doc (OER) for customizability or as adjustable PDF form

### **5.6 Suggestions how vocational guidance practitioners could be enabled to set up the settings on their own (handbook, guidelines, videos etc.)**

It was common sense among the focus group participants, that a manual or handbook accompanying the ER setting(s) would be required. These were the suggestions on the topics it should cover:

- Presentation of guiding information depend on user, some prefer written instruction, other videos
- videos are good, but not necessarily
- videos and/or photos are good to show final setup (how ER should look like)
- the more detailed, the better
- understandable
- explanation of the original condition of the parts of the box, so that next user finds the box in its original state
- should contain one part on the topic of reflection: questions for reflection: what did the participants take with them? explanation on background and context (what does it tell about the participant)
- Good template:  
[https://www.bildungsketten.de/intern/system/upload/Materialien/Arbeitshilfe\\_try\\_five\\_Erlebnisparcours.pdf](https://www.bildungsketten.de/intern/system/upload/Materialien/Arbeitshilfe_try_five_Erlebnisparcours.pdf), includes different chapters
  1. Application possibilities
  2. Setup and procedure
  3. Personnel requirements
  4. Instructions for riddles and required materials

### 5. Templates and checklists

- for individual riddles and riddle packs, learning objectives could be described -> they facilitate reflection
- show ways participants can reflect their own role in the group afterwards -> combination with learning goals
- could include advice to teachers if they supervise ER:
  1. let participants ask for support (do not help immediately)
  2. hold oneself back = opposite to usual teacher impulse to help
- present different learning types, for example reserved participant who seems uninvolved but in reality is still puzzling over the riddle

### Additional tips

All trainers and department heads should have played the Escape Room also, in particular if it is used by a training company for apprenticeship marketing/hiring purposes.

It might be interesting to add another challenge if students play against their trainers/educators.

In order to convince companies and actors in vocational guidance to pick up the ER approach, it can be sold with the argument of a “one-time effort only” – once you have created your individual setting on the basis of the Escape2Stay ER settings you can reuse and/or easily adapt it afterwards.

Why not suggest to companies or other organisations providing vocational guidance to get their apprentices or students create an ER for other students or aspiring apprentices?

It is important to explain ER to players and point out, that there is nothing to be afraid of, it is “nothing evil” (quote of a participant).

We must also consider group dynamics sufficiently. Sometimes there can be players with a zero-buck mentality (“everything is boring and dumb”). Sensitivity and a smooth introduction might help.

We can get inspiration for riddles in online assessments tasks for analyzing one's own strengths and weaknesses.

We might want to determine how to provide assistance when players are not making progress, for example allow max. 3 tips by ER supervisor or in writing. Each tip brings the players closer to the solution. But attention: the tips should be formulated well in terms of “not too easy but supportive”.

The experience of own success is very important.

### **5.7 Do you have any Ideas for possible storylines that guides students through Escape game (titles and key story) and which riddles/puzzles/mini activities could be challenging for them to Escape the room?**

Unfortunately, there was not enough time during the focus group discussions to discuss this question.

## 6) Recommendations in 9 statements

- 1) The Escape room settings should be perceived as one element of the vocational orientation strategy/process, further information and orientation activities beforehand and after are necessary.
- 2) For creating Escape room settings there are two main goals Escape rooms can pursue: a) recognising and mapping own strengths, weaknesses and inclinations before choosing a career plus empowerment or b) suitability of an applicant for an occupational field or profession – or in combination with presenting key aspects of an occupational fields or unknown occupation(s).
- 3) The Escape Room settings could take into consideration so-called bottleneck occupations, such as electrical installation and assembly, machining technology, plastics processing, pipeline construction, welding technology, mechanical engineering as well as in the care sector: health care, nursing and care for the elderly. Ideally, they should be created in close cooperation with one or two companies.
- 4) The partnership should determine and later also communicate concrete expectations towards the Escape room settings: what can be done with them and cannot be done.
- 5) Digital (online) Escape rooms were requested by several focus group participants – in the project the resources do not seem to be sufficient to allow programming etc. It is advisable to focus on real life (offline) Escape rooms, that can include digital devices.
- 6) It is important to consider the gender difference, both for choosing the Escape room narratives and the general aim to attract more female students to VET.
- 7) The Escape room objects and decorative elements (in the mobile box) should be not too much, in terms of weight, easy to re-build and well reusable.
- 8) The spirit of success and self-efficacy should always be considered, for example with providing a concrete moment of satisfaction at the end of the game and/or a special price/award for the winners that keeps up the motivation.
- 9) The whole Escape room setting should be build around a few riddles in line with the motto: better fewer puzzles but of good quality and well tested.

## **7) Demystifying the idea of a VET pathway as second choice: good reasons to start a VET programme in Germany**

When talking about VET pathways, people usually think of apprenticeships, where students learn a profession in a company or institution and attend vocational school. The final qualification is usually a skilled worker's certificate. Image problems do occur among those acquiring an intermediate school leaving certificate, but even more among students at grammar schools. For them apprenticeship options are hardly an issue. For many, vocational training is seen as a poor alternative to studying, at best as plan B or C if the school-leaving certificate is not good enough. Thus, different online platforms for all aspiring apprentices offer comprehensive information on the advantages and disadvantages of the different pathways to choose after general or secondary school. In the case of apprenticeship, advantages are said to be (Stuzubi platform 2020):

- Rapid financial independence: monthly training salary right from the start
- Practical relevance: work in the company and quickly taking on own tasks
- Clear structures: in the company, a training manager or supervisor is responsible for the apprentices, at vocational school there is a fixed timetable according to subjects
- Fast career entry: apprenticeships usually last only two or three years.
- Good chances of being taken on: many companies offer vacancies for young professionals to their apprentices.
- No A-Levels necessary: in principle, although some companies give preference to A-levels
- Additional qualification in demand: University graduates with an apprenticeship are in demand on the labour market.
- Bridging waiting periods for degree programmes with numerus clausus (NC): Those who complete training during the waiting period are often given preference in the advancement procedure.

### **Outlook**

In the year of the pandemic, there were increasing difficulties in bringing together the training offered by companies and the demand from young people. Training fairs, job fairs and company internships could not take place in most regions. As a result, 59,900 or 11.7% of in-company training places on offer were still not filled as of the reporting date September 30, 2020, and 78,200 applicants (14.3% of demand) were still looking. Many companies want to provide training because they are banking on the future, and to do so they urgently need young skilled workers. Unfortunately, the pandemic has brought almost all career guidance measures for students to a standstill." Internships, training fairs and personal job interviews could not take place. In view of the lockdown, it is now all the more important, according to the Chamber of Industry and Commerce, to pull out all the stops in career guidance.

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**Annex 1: Escape room examples (description, stories, teacher guides/handbooks and kits, student packs):**

**German:**

<https://demokratielabore.de/workshops/auf-mikas-spuren/>

<https://www.bz-niedersachsen.de/Escape-room.html>

<https://www.cs.uni-potsdam.de/room-x/files/Fall181120/>

**English:**

<http://www.school-break.eu/Escape-rooms>

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**Annex 2: University of Applied Management Berlin**

Their Escape Room Design (Gramß et al 2018):

- o Real-life scenario: quarantine
- o 5 - 7 participants
- o Goal: Strengthen media literacy of participants.
- o Target groups: Landscapers, retail salespeople, production workers and people returning to work
- o 4 tasks, must be solved one after the other
- o after each solution of a task, the password thus found must be entered into a specially created app, whereupon instructions for the next task are given
- o accompaniment by audio recording, which leads through the course of the game
- o duration approx. 45 minutes
- o all materials can be stored in a case, so the Escape Room can be set up at different locations -> high flexibility and applicability
- o set-up by provider, not target group of career counselors/teachers/personnel in the training company
- o each participant is equipped with a smartphone or tablet, tasks can only be solved with the help of these different technical devices and the digital applications or apps available on them.
- o scoring system: team receives max. 25 points per task, total 100 points
- o different test runs, so that task difficulty was adapted to the prerequisites of the participants.
- o Subtasks e.g:
  - find a hidden key with the help of an app,
  - translate foreign languages,

- navigate,
  - switch on a lamp with the help of an app,
  - use social networks -> crack a password of a fictitious person
  - discover hidden messages with the help of an augmented reality application
- 

### **Annex 3: Puzzle Organization, according to Nicholson (2015)**

There are different puzzle types. With regards to a basic structure puzzle are mostly organized either individually, with different puzzles feeding directly into a larger meta-puzzle or sequentially, where puzzles need to be solved to be able to access the next puzzle. Nicholson (2015) found in his survey the following 3 basic types, how puzzles can be organized.

- 1) Open (less common): players take a large number of puzzles in the room at the same time. As they solve puzzles, they receive pieces of the final solution.
- 2) Sequential (second most common): players solve one puzzle after the other, each of them leading to the next puzzle and at the end to the final solution
- 3) Path-based (most common): team gets several starting points for different paths of puzzles, each path is a sequence and players need to solve all paths to get parts of the meta-puzzle, which is the final solution

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