

SpeakOut – A digital platform for orientation and self-help for personal and social problems of students at university

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Abstract. This work presents the development of an online platform (SpeakOut) which follows a user-centered participatory design approach considering students' interests. It was investigated how the graphical user interface of the application should be designed to provide a positive user experience. By involving individual interest groups, both improvement potential and requirements for the system are identified, adapted and

transferred into a final prototype in several design iterations based on workshops, heuristic evaluation, a user evaluation, interviews and guerrilla testing. More and more students are struggling with e.g., fears or depression during their studies. Therefore, prevention work through low threshold university offers is becoming increasingly important. Our results show that a university platform for students requires simple structures, short precise texts, and a visual language. SpeakOut is promising as a profitable instrument in the mediative process of conflicts. It offers a preventive approach to orientation and self-help for students' personal and social concerns.

Introduction

Motivation

Even before the outbreak of the Corona pandemic, students represented a vulnerable target group. In 2017, almost 100,000 students sought help from the German Student Services¹. Covid-19 and the restrictions that have accompanied it socially since the beginning of 2020 represent additional stressors. In various surveys, the Federal Statistical Office (2021) recorded a stress perception of 'rather strong' to 'very strong' among 68% of all international students surveyed and 69% among those with German university entrance qualifications², whereby the personal perception of stress was of an individual nature and differentiated according to vulnerability³. According to 62% of all respondents, coping with learning material had become 'rather more difficult' to 'more difficult' during the pandemic. Likewise, structuring the day. 58% of them find it more difficult to follow online events than live events before. 57% find exam requirements more burdensome at these times, again based on the vulnerability of the individual (e.g., those with impairments 67%; Covid-19 risk group 61%, students with child 61%). 61% also say that communication with teaching staff is now more difficult. Interaction in study groups is even more difficult for 77% of respondents, and 86% report less contact with fellow students. Psychological impairments have increased massively because of Corona⁴.

¹Deutschlandfunk: <https://www.deutschlandfunk.de/psychologischer-beratungsservice-immer-mehr-studierende-100.html> (Last accessed: 2nd of August, 2023)

²statista: <https://de.statista.com/statistik/daten/studie/1237385/umfrage/studierende-mit-psychischer-beeintraechtigung-nach-faechergruppen/> (Last accessed: 2nd of August, 2023)

³statista: <https://de.statista.com/statistik/daten/studie/1237304/umfrage/pruefungsbewaeltigung-von-studierenden-nach-vulnerabilitaet/#professional> (Last accessed: 2nd of August, 2023)

⁴statista: <https://de.statista.com/statistik/daten/studie/1237316/umfrage/stressempfinden-von-studierenden-nach-vulnerabilitaet/> (Last accessed: 2nd of August, 2023)

Problem and objective

A lack of anonymity can have a discouraging effect and thus make it difficult to address serious problems, especially in very sensitive conflict zones, such as bullying, fear of failure, and depression but also circumstances such as financial struggles or loneliness. Through a combination of stigmatization and lack of privacy, the path of the natural self-help that every person disposes of can disappear. As a result, 'seeking help' can prove complicated for those affected (Bauer et al., 2005). Therefore, our contribution is focused on this. Because of the lower stigma due to anonymity when using eHealth products, the inhibition threshold in 'seeking help' is reduced, leading to increased autonomy of the affected person (Bauer et al., 2005). Also, an important factor to expand eHealth services in Germany is that increased mobility can ensure a significant improvement in patient accessibility in terms of service use, regardless of time and place (Gigerenzer et al., 2016).

Students represent a large target group of effect carriers, among whom symptom carriers are often found. Therefore, the overall project aim of SpeakOut was to create a private digital space that strengthens the advocacy of students in general and minorities, such as the LBTTQIAP+ community or students with disabilities, in particular. In this way, stigmatization is counteracted by promoting a stronger perception of interpersonal interaction and mutual acceptance. The generation of knowledge in the thematic focal points of the platform would intend to help users achieve more self-determination. However, since SpeakOut was only a one-year project, the development focus was initially on the graphical user interface (GUI) as well as good user guidance to help students find competent support in the university context, where information and contact persons are often difficult to find due to the high density of the first.

In this study the students' expectations of such a platform are investigated to avoid a negative reaction of the target group. Given the current developments in the business domain, two questions are posed for further action: 1) How must a virtual assistant be integrated into an eHealth-based platform? and 2) What interaction elements must this platform offer to create a good UX? Following these questions in the course of this work a user-centered concept for the SpeakOut platform is developed. In order to ensure this a Participatory Design (PD) approach has been followed, so the needs and requirements of students as well as other stakeholders, such as the Central Student Counseling Service and usability experts (HCI MA students), have been taken into account.

Research background

Mental health challenges of university students and university counselling

Studying at universities and colleges can be a positive and enjoyable experience. It can help build self-confidence, increase performance and improve mental health. However, it can also be challenging and stressful. Attending university is associated with lifestyle changes and increased autonomy in personal life. As many young adults move from the parental home to shared or single apartments, the social environment changes.

A study (Auerbach et al., 2018), part of a World Health Organization (WHO) initiative, examined the prevalence of mental disorders including major depression, mania, generalized anxiety disorder, panic disorder, alcohol use disorder, and drug use disorder among first-year students at 19 universities in 8 developed countries. The surveys found that 1 in 3 first-year students reported symptoms of mental illness.

According to the 2016-2017 Healthy Minds Study, there is a perceived stigma among college students against publicly admitting to a mental health condition. Just over half of the students surveyed agreed with the statement that most people think less of a person who is receiving mental health treatment (Eisenberg et al., 2017). Thus, they describe a sense of social isolation associated with the stigma of mental illness, which is why they are often unwilling to seek help (Megivern et al., 2003). Mental health problems have further far-reaching implications for all aspects of campus life: at the individual, interpersonal, and institutional levels (Kitzrow, 2003).

Diverse study findings suggest an unmet need for internal university counselling services (Auerbach et al., 2018). Timely and effective treatment is important. However, the number of students who need it due to personal challenges and mental illness far exceeds the resources of most counseling centers. This results in a significant unmet need for mental health treatment (Auerbach et al., 2018; Unbehaun et al., 2021). The need to provide counseling to such a wide range of students and issues including multicultural as well as gender issues, career and developmental needs, life transitions, stress, violence, and serious psychological problems is one of the greatest challenges facing college counseling centers (Kitzrow, 2003). Grobe (2018) particularly advocates low-threshold offers that students can take advantage of at an early stage. A potential is seen in anonymous online offers that take into account the “smartphone generation” (Grobe et al., 2018). In their recent study, Williams et al. (2021) highlight the importance of providing navigational support to facilitate clear and efficient navigation of resources. In particular, they note that participants in their study “consistently

expressed difficulty in locating resources and had limited knowledge of the resources and services available to them on campus” (Williams et al., 2021, p. 3). This finding emphasizes the challenges individuals face in finding and understanding the resources available to them. In a related study, Motahar et al. (2020) investigated the ways in which international graduate students seek support. They found that their participants frequently used social media platforms, such as Facebook and Twitter, to obtain information and network support. This use of technology highlights a modern approach to seeking support and highlights the role of digital platforms in contemporary support seeking behaviour.

EHealth

Health information and programs are made available to the general public on the Internet. This is of particular benefit to people who, due to physical or mental disabilities, have difficulty accessing personal services (Ertl et al., 2019, 2020). Internet access is available around the clock and from almost everywhere. By presenting texts and other information in a variety of formats, languages, and writing styles at different educational levels, the presentation can be customized to the user. With the help of specific functions, technology-based interactivity between different people, such as the people concerned, psychologists, doctors, etc., is made possible (Taylor & Luce, 2003; Unbehau et al., 2018, 2019, 2020).

Internet-based innovations and technologies are rapidly expanding the reach of psychological interventions around the globe. A Bertelsmann Stiftung population survey of 1.074 German Internet users aged 18 to 80 on “Searching for health information online” (Marstedt, 2018, p. 1) found that 46 percent of respondents use the Internet for health-related questions (Marstedt, 2018). Thus, it represents an essential first point of contact for patients. In this context, the term computer-assisted therapy is defined as psychotherapy that uses a computer program to deliver a significant portion of the therapy content, or the use of a computer program to assist the therapist. Because of its strong standardization, structuring, and many psychoeducational elements, cognitive behavioral therapy (CBT) is usually best suited for eHealth approaches (Klein & Berger, 2013). CBT is a widely used, effective form of therapy used for a variety of mental disorders (Kiropoulos et al., 2008) and, with reference to the APA (American Psychological Association), described by the authors as “‘gold standard’ psychological treatment approach” (Kiropoulos et al., 2008, p. 1273). Its “set of techniques in which there is a combination of a cognitive approach and behavioral procedures” (Chasqueira et al., 2022) offers a good diversity for designing an eHealth platform.

In a different study by Harrison et al. (2022), the authors took a closer look at post-graduate students and their risk of experiencing mental health concerns. Their prototype helped to connect students for in-person meetings, which had a positive impact on their stress levels and raised their awareness for selfcare. However, the

authors conclude that these “technologies must be utilized carefully, and are not a replacement for other sources of student support in universities” (Harrison et al., 2022, p. 10:2). Lederman et al. (2014) also examined in their study the importance to pair up moderation and consultation, where they conclude “that the unique combination of peer interaction, clinician support, and online therapy provided a level of support that built on the success of previous health-based applications that provided either one or two of these features” (Lederman et al., 2014, p. 5:23). Here the authors stress out that the specific target group needs to be acknowledged with their specific characteristics.

Conversational agents

One of the most important forms of communication in our society is language. It is attractive as a natural, flexible, and efficient means of communication, especially for interpersonal communication (Zue & Glass, 2000). Chatbot technology provides a way for humans to interact with computers in natural language (spoken human language) (Clark et al., 2019). Chatbots are often designed to convincingly simulate the behavior of a human counterpart.

However, chatbots are not a new development. The first measurement of artificial intelligence (AI), known as the Turing Test, dates back to the 1950s. It measures whether a human can distinguish a machine from another human as a conversational partner. Attempts have been made since then to develop an intelligent machine that can pass the test (Hettige & Karunananda, 2015). So-called ELIZA was the first program that did. With her the first chatbot was developed in 1966 at the MIT AI Laboratory by Joseph Weizenbaum. ELIZA simulated a simple text-based conversation between a human user and the computer pretending to be a therapist (Weizenbaum, 1966). Originally, chatbots responded only to written texts, but in the last decade they have become more versatile and include speech synthesis and recognition as well as affective state detection and responses (Hussain et al., 2019).

Positive computing and design for well-being

In the HCI community, interest in promoting mental health and well-being has led to new areas of research and development in recent years to integrate scientific principles of well-being into the design of interactive systems (Calvo et al., 2016). One of these principles is positive computing (Botella et al., 2012). Calvo and Peters (Calvo & Peters, 2015) define positive computing as the design and development of technologies to support psychological well-being and human potential.

According to Diefenbach et al. (2017), activities can influence well-being by increasing positive emotions, behaviors, thoughts, and fulfilment of important psychological needs. Deci and Ryan's (2000) self-determination theory (SDT)

assumes that basic needs drive the goal-setting process. Intrinsic ambitions - personal growth, belongingness, and intimacy – are set according to need fulfilment and thus contribute to one's well-being, community, and physical health. For Deci and Ryan (2000), three basic needs are a critical prerequisite for psychological growth: autonomy, competence, and relatedness. The fulfilment of needs is therefore seen as a natural goal of human life that describes many of the meanings and purposes underlying human action (Deci & Ryan, 2000). The practice embedded in an experience is understood to be an important level of design because it provides the activity in context to fulfill a particular need. This in turn provides positive impact and meaning (Hassenzahl et al., 2013).

Positive computing strives to incorporate scientific knowledge from well-being psychology and neuroscience into everyday technological experiences (Gaggioli et al., 2017). Therefore, creating a good user experience (UX) when using a technological artifact can support positive computing. In this regard, it can also promote the user's mental health and well-being (Calvo et al., 2016), making positive computing a good approach for a user-centered design of an eHealth platform.

Methodology

SpeakOut is guided by the Design Case Study approach. This user-centered research approach focuses on the cultural and social context (Wulf et al., 2011). It is defined by the interaction between a particular technology and a social practice within a particular socio-technical framework. In the Design Case Study, the use and development of technology is observed within a socio-technical framework (Rohde et al., 2017; Stevens & Pipek, 2018). In application, qualitative approaches are preferably ethnographically grounded (Aal et al., 2016, 2018; Rohde et al., 2017; Rüller et al., 2022; Wulf et al., 2011).

The goal of this user-centered research approach is to develop interaction possibilities to support the user group with their social problems (Wulf et al., 2011). This is made possible by a three-phase design consisting of (1) an empirical pre-study, (2) prototyping (participatory) IT-design, and (3) evaluation/appropriation. In this way, the Design Case Study allows us to understand the relationship between the social practices, the students seeking help, and the design of the SpeakOut platform (Rohde et al., 2017).

In the present Participatory Design study, users, HCI experts, and the university's Central Student Counseling Service are involved in the creative process through various testing methods as well as workshops, thus assuming the role of active design agents. In this process, the ideas and perceptions of each stakeholder group are incorporated into the iterative concept. The step-by-step development of user interfaces involves continuous design improvement based on

user testing and other evaluation methods (Nielsen, 1995). The overall 21 participants divide themselves among the different design steps as follows:

First, three participatory design workshops took place where one male person (head of Student Services Department) with fifteen years of professional experience and two female persons (department head of Central Student Counseling Service and psychologist from Psychological Counseling Service) with twelve and two years of professional experience participated.

Second, a heuristic evaluation took place. Here three HCI-MA students were involved. They were between 24 and 28 years old and had good usability skills due to their degree program and practical experience.

Third, a user evaluation took place. The participants could be recruited through personal contact. Due to the importance of both genders for the usability tests, both male and female students were considered. The five participants were exclusively students at the university for which SpeakOut was developed. During the tests, they were between the second and tenth semesters. All of them had German citizenship. Only one of the respondents indicated French as their native language, the others German. In the area of age structure, an age between 20 and 27 years was given. None of the respondents suffered from physical or mental limitations. Represented were students from the study programs architecture, media studies, literature, culture and media, and elementary school teaching with integrated remedial education. Two of the participants indicated that they were not particularly familiar with the use of smartphones, tablets, or laptops. The remaining participants had average to good experience using mobile devices. Three of the respondents had previously sought out the university for a support option. Only one of them used the university website to find his contact person. In contrast, the other two reached their destination via Google search.

Fourth, another user test was carried out using the method of guerrilla testing with the help of a random sample (5 female and 5 male students).

The representative characteristics of the central user group that have been worked out in the pre-study on user research, which will not be in focus of this publication, are joined by problems identified as generally faced by students during their studies: inquiries about studying, being overwhelmed or underchallenged, social conflicts, financial problems, loneliness, gender issues, stresses at home, fears about the future/lack of orientation, lack of time management/procrastination, study subject doubt, relationship issues, mental challenges, physical impairments, sexism, racism, and culture shock/adaptation issues. However, as the preliminary study found, the overarching problem is that students do not know where to turn for help with their problems. With this in mind, we worked with personas and scenarios, which were often used to justify design decisions during the design process. In the context of the user evaluation/usability test, they served as the basis for generating the Use Case.

Design of the SpeakOut platform

Design implications

With the help of an eHealth platform as an information medium (Laszig & Eichenberg, 2003), students with psychological or personal concerns can find out anonymously whether there is a suitable support service for them. This can overcome an initial inhibition barrier. Subsequently, when they are assigned a contact person, they can decide whether and by which method of contact (synchronous/via chat by using audiovisual media or asynchronous/via email) they would like to use the offer.

Through the principle of a chatbot, such an eHealth platform can be realized. Students receive support for problem solving and self-help. A task-oriented chatbot communicates to them the right contact person for university or personal concerns in short conversations.

In this work, in line with the usability of SpeakOut, it is first decided to test relatively simple rule-based approaches for chatbots. By having the bot provide students with response options, a fluid dialogue can be facilitated. Asking for symptoms is one way to assign a contact person. In this context, it is important to provide the user with a safe comfort zone. For this reason, the concept development of the SpeakOut platform should address the needs and requirements of the user following the approach of positive computing (Botella et al., 2012; Calvo & Peters, 2015).

The application of the platform should generate a positive UX and thus promote general well-being (Calvo et al., 2016). Based on this, the system should, according to SDT, be designed to promote three needs: autonomy, competence and connectedness (Deci & Ryan, 2000). By enabling users to help themselves through easy access to information, both the need for autonomy and competence can be satisfied. By influencing one's own situation through independent action and exploration of the system, the impression of autonomy can be reinforced. Through such self-determined action, well-being is also promoted (Diefenbach et al., 2017). Users can decide for themselves how to access their information. Connectedness is created on the one hand by the support of the contact persons of the different advice centers and on the other hand by the interaction with the chatbot. In this way, the bot can be implied as a kind of person, thus creating a feeling of support.

Following a participatory design approach with iterative design elements, several prototypes were tested and revised based on the feedback. The following visual insights correspond to an exemplary presentation.

Participatory Design Workshop 1 and 2: Design of the user interface

For the conception of the SpeakOut platform it is important to integrate all relevant support centers for students. The main categories psychological counseling, studying with family, financing, housing, work and career, and those affected by disabilities are defined in a tree structure for the platform together with the Central Student Counseling Service. In addition, a brainstorming session was conducted to define other requirements for the prototype. Based on the design implications from the literature and the collected needs and requirements of the target group (pre-study/user research), the prototyping phase was then initiated.

The goal was to help users with personal or mental health challenges through a virtual chatbot by delivering messages according to the principles of CBT (Kiroopoulos et al., 2008; Klein & Berger, 2013) and taking into account design-oriented principles of positive computing (Botella et al., 2012; Calvo & Peters, 2015).

As a first draft, a basic framework of the platform was created in form of a wireframe based on the personas and scenarios. Using possible Use Cases, it was examined how the platform represents the best possible solution for a user query. The wireframe, after agreeing on all conditions and needs, served as the design basis of the SpeakOut platform (SpeakOut 1.0) and thus the basic framework for the first prototype (Figure 1).

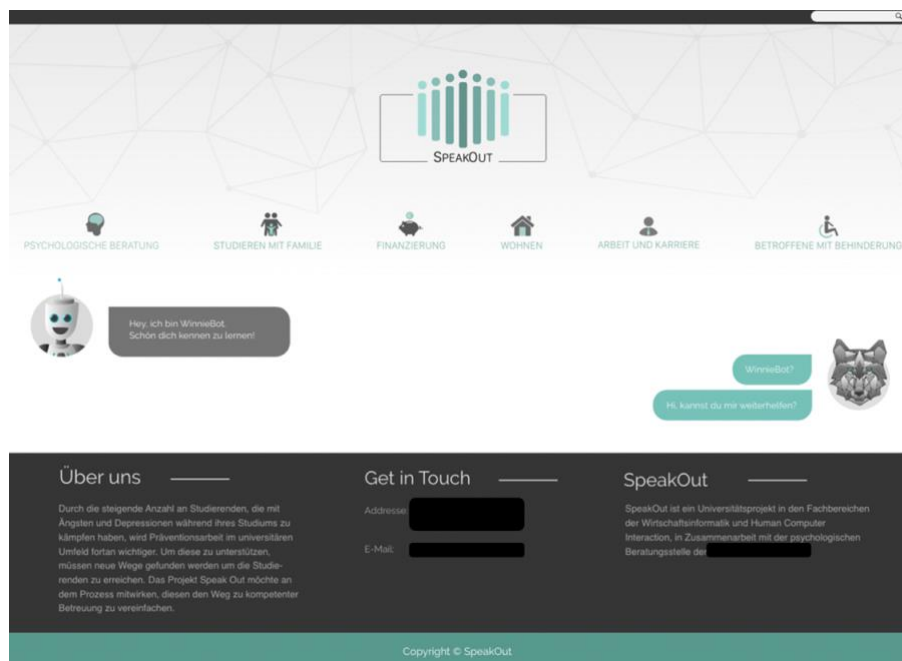


Fig. 1. SpeakOut 1.0: Start page

In a first Participatory Design workshop, the existing concept and screen designs (see Figure 1) were tested and evaluated. Notebooks with the Adobe XD program were available for testing the prototype. It was examined whether the interface

concept is understandable and whether the design works convincingly. For this occasion, three employees of the Central Student Counseling Service participated in the workshop. The participants included the head of the Student Services Department with fifteen years of professional experience (male), the department head of the Central Student Counseling Service (female) with twelve years of professional experience, and a psychologist from psychological counselling who has been working in this field for two years (female).

In this first test phase, the aim was to find out whether the participants understood the platform, the design, and the interaction elements. As key stakeholders, they were integrated into the design process with the help of a subsequent discussion round. In the discussion, the participants identified some points of criticism as well as usability problems while exploring the system and made suggestions for the design optimization. The critiques in the PD workshop have been implemented in the next iteration step in the form of a revised prototype (SpeakOut 2.0, Figure 2) which was then re-evaluated and revised during a second PD workshop (SpeakOut 3.0, Figure 3) with the same participants:

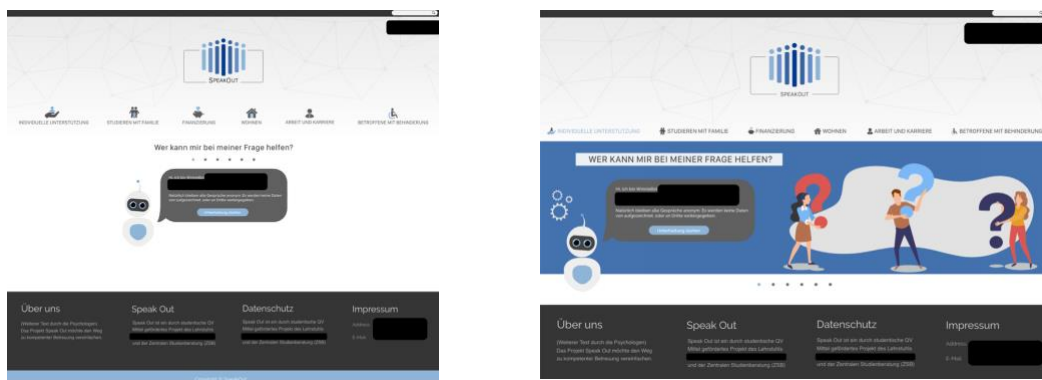


Fig. 2 and 3. Revised prototype of SpeakOut 2.0 (left) & re-evaluated and revised prototype SpeakOut 3.0: Start page (right)

The design of SpeakOut 3.0 was then shared written with the workshop participants, with renewed feedback resulting in SpeakOut 4.0. The design status obtained then formed the basis for the heuristic evaluation with the usability experts (HCI-MA students).

Heuristic evaluation

Regardless of the technology, interface, or medium, users prefer one product over another when good usability is provided. According to ISO 9241-11, usability is the extent to which a product can be used by specific users to achieve specific goals with effectiveness, efficiency, and satisfaction in a particular context of use (International Organization for Standardization, 1998). Different methods can be used to measure the usability of a product, the most commonly used one being Jacob Nielsen's heuristic principles (Molich & Nielsen, 1990). The results are

assigned by the experts according to severity from zero (no usability problem) to five (usability disaster) according to Nielsen (1995).

Before the prototype was tested by the target group, a heuristic evaluation by usability experts first uncovered potential usability problems that users may encounter. The heuristic evaluation of the SpeakOut interface design involved three HCI-MA students who were between 24 and 28 years old and had good usability skills. Likewise, each of them was given a list of Nielsen's 10 heuristics (Nielsen, 1995).

The heuristic evaluation resulted in initial optimization suggestions. Forty-nine usability problems were identified, forty-three of which could be attributed to the platform and six to limitations caused by the Adobe XD prototyping tool. The majority of the usability problems found could be classified as severity levels one and two (Nielsen, 1995). The results were examined and analysed in more detail and possible solutions were then developed and transferred to a new prototype version (SpeakOut 5.0) which has been further evaluated during the upcoming usability tests with users from the end-target group.

User evaluation

Usability tests serve to find out how the target group experiences the concept and design of the SpeakOut platform. The aim is to find out whether interaction elements such as navigation, icons, buttons as well as the conversational interface are easy to use for the user group. The UX fundamentals for designing chatbots are partly the same as for a platform. The difference is that buttons, switches, and tabs in conversational design are replaced with content and chat elements. With the help of the platform, the target group examined whether a UX that was as intuitive, natural, and pleasant as possible could be created. In addition, it was to be examined whether the needs and requirements of the students for the platform were met.

For the user test, an execution sheet was developed that already contained all questions and tasks as well as the complete test procedure. This included an introductory questionnaire to collect demographic data and to verify that the respondents belonged to the target group. The five male and female participants, students of the university in focus here, were then asked to perform various tasks without support and to describe how well they got on with the platform. This was done using the Thinking Aloud method, in which participants speak their thoughts aloud while working on a task (Masthoff, 2006). Finally, a semi-structured interview took place (Wilson et al., 2014). Thus, subjective feedback from the users could be obtained (Masthoff, 2006).

The bot was viewed positively and described as an attractive alternative to reach their contact. Participants who had indicated in the initial questionnaire that they had already looked for a contact person in the past were asked whether they had wished for this platform at that time. The participants concerned answered the

question unanimously affirmatively. One participant drew a direct comparison to the university website:

“Yes, because I actually also criticize the site of the university, that there are so many sub-items [...]. Because just to read through all the subsections and if you are under stress, then you already despair [...]. That's why I think it would be nice if there was a separate page for these kinds of problems.”

From the beginning of the scenario until the respondent left, the test was videotaped and recorded using audio for adequate back-up.

Participatory Design Workshop 3 and Guerilla Testing: Creating a final prototype

The last prototype used (SpeakOut 5.0) as well as the results of the heuristic evaluation and the user evaluation were evaluated in another round of discussions with the participants of the Central Student Counselling Service who had previously taken part in the PD workshops.

In addition, another user test was carried out using the method of guerrilla testing with the help of a random sample (5 female, 5 male students) in the university canteen. Three different designs for the ‘Individual Support’ icon were presented, with results of 70%, 20% and 10%, indicating a clear preference (see Figure 4, tree structure left).

The findings from both, PD-Workshop 3 and the guerrilla testing, were transferred into a final prototype (SpeakOut 6.0, Figure 4):

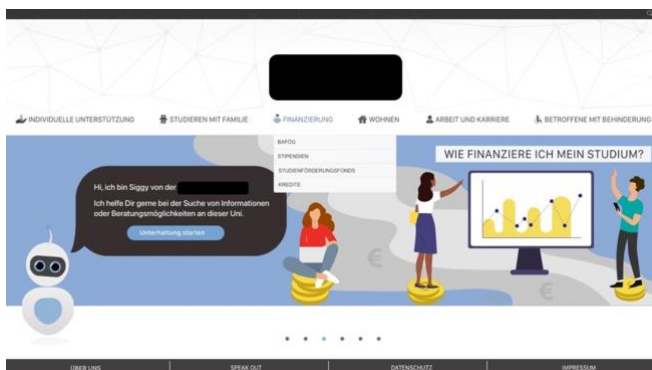


Fig. 4. SpeakOut 6.0

From the results of the various tests and discussions, it can be deduced that a university platform for students needs simple structures, short precise texts and pictorial language. Long content and complicated user paths discourage the user, especially when under stress. Through icons and simple interaction surfaces as well as graphics, the user feels addressed and is thus more motivated to explore the application.

Reflections about the study

Limitations and future prospects

The results from this work cannot be generalized, as only small numbers of cases were used due to the limited time and resources available. Besides, this is a case study and generalizability is not the aim. Thus, the small number of participants in the usability tests should be noted. A higher number of people from the end user group would be desirable in order to identify further needs and requirements for the system. Despite this, the final interviews in the user evaluation/usability tests showed that the participants were satisfied with their results and after achieving their goal of finding a contact person. Moreover, they felt more comfortable on the SpeakOut platform than on the university website. Whether the well-being of the user group ultimately increases, could not be determined in this work. Thus, only the well-being goals were used when designing the concept. In a long-term study it could be tested whether the application has a positive influence on the well-being of the students, especially for students with mental illnesses, who were not part of the sample in this work.

Making the chatbot an invaluable experience for the target group takes time. This will require developing more use cases and looking closely at what kind of dialogue leads to user satisfaction and engagement. It is important to identify how they can help users achieve their goals effectively and use them to that end. The chatbot provides highly task-oriented information based on selectable responses. Thus, there is more of a guided dialogue than a conversation. However, based on the developed chatbot, a conversational AI solution can be developed that provides more value to the end user through natural communication.

Conclusion

With the aim of helping university students with personal or mental health problems to find the right contact person when seeking help, this paper presented the development process as well as the UX-oriented design of an eHealth platform called SpeakOut, which includes a virtual chatbot designed to facilitate the search for support through dialogue. The design process was based on the principles of CBT (Kiroopoulos et al., 2008; Klein & Berger, 2013) and took into account design-oriented principles of positive computing (Botella et al., 2012; Calvo & Peters, 2015).

Since the concept of the platform was approved by the different stakeholders, SpeakOut can be called as beneficial tool in the mediative process of personal challenges. The user group responded positively to the platform when testing the prototype. It can be concluded that the application is user-centric and meets the

needs and interests of the students. Matching the principles of both – positive computing (Botella et al., 2012; Calvo & Peters, 2015) and CBT (Kiroopoulos et al., 2008; Klein & Berger, 2013) – it can promote the mental health and well-being of the users (Calvo et al., 2016). The SpeakOut platform can therefore potentially be a useful extension of the university website and serve as a complementary information medium. This was the result of the positive evaluation of the user group as well as the good feedback of the usability experts and the Central Student Counseling Service.

These results point to a successful addressing of the key factors: autonomy, competence and connectedness (Deci & Ryan, 2000) through enabling students to help themselves via independent action and easy access to the information needed and offering the opportunity to connect with the chatbot and the human actor searched for. Well-being is therefore promoted through self-determined action (Diefenbach et al., 2017).

After a possible implementing the platform, the next step would be to test it in a long-term study within the real university context (Müller et al., 2015, 2019). Another step would be to expand the contact options within the platform, as currently there is only communication with the bot, but not with the contact person, who is pointed out as an appropriate contact via bot conversation. In addition, the platform should be filled with more information relevant to the different student groups to help them act in a more self-determined way. CBT could be increasingly integrated here. The described extensions of the platform inevitably lead to questions about data security, e.g., those regarding storage, (regulated) accessibility, anonymization, as well as about corresponding formats and devices. For the prospects described, however, additional funding of the project is imperative.

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