

CivicBots – Chatbots for Supporting Youth in Societal Participation

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Abstract. Helping young people participate in societal development is an important factor in achieving a sustainable future. Digital solutions can be designed to help youth participate in civic activities, such as city planning and legislation. To this end, we are using a human-centered approach to study how digital tools can help youth to be active in various aspects of civic life. Chatbots are conversational agents that have the potential to trigger and support thought processes, as well as online activities. In this context, we are exploring how chatbots – which we call *CivicBots* – can be used to support the participation of young people (16-27 years) in important civic activities. We created three scenarios for CivicBots and evaluated them via young people’s responses to an online survey (N=54). Participants’ positive perceptions of CivicBots suggest that CivicBots can advance equality and also that they may be able to reach youth better than a real person. On the negative side, CivicBots may cause unpleasant interactions due to their over-proactive behaviour. Furthermore, trustworthiness is diminished by fears that the bot does not respect users’ privacy, or that it provides biased information about societally important issues.

Keywords: Chatbot, CivicBot, Youth, Civic Engagement, Societal Participation.

1 Introduction

Young people’s involvement in civic development is essential for democracy and the sustainable growth of society [4][19]. Diverse means of participation can make young people able to engage with issues of their choice, and to engage actively without the presence of adults [2]. Developing digital tools for societal discussion and activities contributes to the potential for eParticipation [20] or citizen participation via digital means [15] – in other words, *digital civics* [22] – with the aim of improving democracy and human rights.

ALL-YOUTH¹ is a six-year, multidisciplinary research project aiming at improving the sustainable growth of Finnish society – in a manner that is inclusive of

¹ ALL-YOUTH is a large research project involving five research partners. It is funded by Strategic Research Council of Finland, in association with Academy of Finland. For more details, see <https://www.allyouthstn.fi/en/all-youth-2/>

all kinds of young people. In this project we are developing approaches and solutions for diverse youths to help them be involved in societal or *civic* activities. Relevant civic activities include, for example, discussions of current developments or more concrete tasks such as drafting policy statements or organizing events. Our research group’s specific role in ALL-YOUTH is to study and develop digital solutions for young people’s civic engagement.

Earlier studies have identified obstacles for youth’s societal participation, including lack of interest, doubts about impact, inadequate communication between young people and government officials, and not knowing what communicative channels to utilize [11]. Hence, we are conducting design research on digital solutions that can help motivate youth to engage in civic participation. Three main approaches are used in this context: 1) using *novel technologies* that are attractive to young people and that also afford natural interactions to less technologically-savvy users; 2) *gamification* of civic interactions to increase and maintain motivation [10]; and 3) digital solutions based on principles of universal design, or *design for all* [18].

Chatbots are a novel technology that may be able to tackle obstacles related to youth’s lack of interest in and knowledge about potential channels for civic participation. Chatbots are conversational agents that use natural language dialogue – via text or speech – to help users access services online [8]. Chatbots can be either purely software-based or embodied in physical social robots. In this paper we propose using chatbots as means to support young people’s civic activities. Our central research questions (RQ) are: RQ1: *What are youth’s experiences and expectations of chatbots?* RQ2: *How do youth perceive the concept of CivicBots?* To address the second RQ, we utilized a scenario-based research approach [2], creating three scenarios in which CivicBots could be used. This approach allowed us to explore the potential of the concept before any implementation work was undertaken. To answer both RQs, we conducted a survey to evaluate youth’s experiences of chatbots in general and their perceptions of CivicBots in particular.

The structure of the paper is as follows: Section two provides a brief review of research on chatbot interactions and also of studies of how chatbots can be used to help youth achieve a variety of goals. The following section presents three scenarios for using chatbots for societal or civic participants, i.e., CivicBot scenarios. Section four presents the online survey for evaluating the scenarios, and the results that covered both the youth’s experiences of chatbots in general and CivicBots in specific. Sections five and six discuss our overall findings and conclude the paper.

2 Related Work

Chatbots date back to the 1960s. They are conversational agents that use natural language to interact with their human users, and that thus provide new opportunities for HCI [7]. In the past few years, the advancements in machine learning and widespread use of advanced computer platforms – such as smart phones – have given rise to a new generation of chatbots [6]. These chatbots are increasingly ‘intelligent’ and show potential in many application domains, including customer

service, education, and entertainment. Chatbots can be either purely software-based or embodied in physical social robots such as Pepper or Nao.²

People’s motivations for and experiences of using chatbots have been studied in earlier research. Brandtzaeg & Følstad [1] conducted a study (N=146) on why people use chatbots and found out that productivity, timeliness, and efficient assistance were key factors. Additionally, entertainment, social factors, and curiosity about chatbots as novel agents were considered central motivations for use. Yang et al.’s [24] survey (N=171) studied users’ affective experiences with conversational agents and found that users’ overall experience was positive, with *interest* being their most salient positive emotion. Furthermore, the study identified factors contributing to the pragmatic quality, or usefulness, of chatbots, including *helpfulness*, *proactivity*, *fluidity*, *seamlessness*, and *responsiveness*. Factors contributing to chatbots’ hedonic quality, or enjoyability, include *comfort*, *pride of using novel technology*, *fun*. On the negative side, affecting factors included *privacy concerns* and *distraction*. Xu et al. [23] found that chatbots are effective in dealing with emotional topics via social media, such as complaints about customer service. The ‘uncanny valley’ effect of chatbots was studied by Skjuve et al. [21], who found three factors that affect user experience: conversational content, the chatbot’s perceived personality, and conversational flow.

Youth have been offered chatbots for different purposes related to the enhancement of their wellbeing. Fitzpatrick et al. [7] studied the effectiveness of conversational agents in cognitive behaviour therapy for young patients and found in a controlled trial that conversational agents appear to be a feasible, engaging, and effective way to deliver therapy. Kretzschmar et al. [13] addressed ethical issues and young persons’ viewpoints of the strengths and limitations of using chatbots in mental health support. They outline ethical concerns about chatbots for mental health support, including privacy, confidentiality, efficacy, and safety. In the context of questions that adolescents may have regarding sex, drugs, and alcohol, a study [5] showed chatbots’ potential to reach a varied group of adolescents and to provide them with help with these issues. Another study [17] found that a chatbot can help the young transition from school to college. Morgan et al. [16] developed a chatbot framework to improve children’s access to a legal advisor regarding their legal rights. The study findings also point out that the chatbot should be able to speak and understand children’s language. To our knowledge, however, chatbots have not been studied in the context of young people’s civic engagement.

Følstad et al. [9] have proposed a typology of chatbots based on the *locus of control* and *duration of the interaction*. Locus of control ranges from *chatbot-driven* to *user-driven*, i.e. varies in terms of who has the main control in the conversation. Duration of interaction ranges from very short-term (one-off) relations between users and chatbots to long-term relations that build on the shared interaction history. We use this initial typology in Section 3 where we present scenarios for CivicBots.

² Pepper and Nao are examples of commercial social robots, see

<https://www.softbankrobotics.com/us/pepper> and <https://www.softbankrobotics.com/us/nao>

3 Scenarios of CivicBots for the Youth

In this section we describe the proposed three scenarios for ‘civic chatbots’³, i.e., chatbots that aim at motivating or helping people to engage in civic activities. We call such chatbots *CivicBots*. For this study, we did not implement any of the proposed chatbots, since our research focuses on the early stages of human-centred design, using a scenario-based approach [2]. The scenarios we designed to cover different types of young users, as well as different goals and contexts of use, to illustrate the variable purposes and potentials of CivicBots. We also point out how these CivicBots fall into Følstad et al.’s typology [9]. Section 4 presents the online survey in which we evaluated these scenarios with the youth.

Scenario 1: VirtualCouncilBot. The goal of this bot is to facilitate discussion about an authority-driven topic in an inclusive manner.

*Tina (16 years) is an active member of the local youth council. She has been invited to join a group in a discussion platform – called Virtual Council – to provide input for the new environmental law under development. The goal is to gain input from young people about how they see the law’s effects for the local environment and activities. Even though Tina is a societally active person, the group consists of many different types of young people, some of whom are not especially interested in civic participation. One of the group members is a VirtualCouncilBot that **presents questions to the participants** such as ‘what do you think of...’ and ‘would you agree with...’. If some participants are **not active**, VirtualCouncilBot **asks them specifically for their opinion**. Tina and others can also ask VirtualCouncilBot to **explain terms and concepts they do not understand**. VirtualCouncilBot also **summarises the discussion** at the end of the day for the participants as well as those who could not participate in a given session. It also **brings up the summary at the beginning of the next session** and asks if anyone wants to comment at that point.*

Scenario 2: EuroElectionBot. The goal in this scenario is to raise youth’s interest in politics and encourage them to vote, and help find a suitable electoral candidate.

*Max, 19 years, is lying in his bed late in the evening. His mother has reminded him that tomorrow is the last day to vote in the EU election. While **swiping through his Instagram feed**, a picture of EuroElectionBot shows up. Even though Max is skeptical about the effectiveness of the MEPs, he opens the link that takes him to the bot. He installs the EuroElectionBot app and **customizes it to fit his preferred look and feel**. EuroElectionBot asks Max which topics he would like to discuss, starts showing short video clips and asks Max to comment on their claims. After showing clips about four topics, the bot asks if Max wants to see more topics. Max agrees, as he finds the interaction to be quite entertaining. After eight topics, **the bot shows the candidates most likely to be a good fit with Max’s views**. Finally, EuroElectionBot asks Max if he would like to share with his friends the link to the bot.*

³ This term has been used for a slightly different purpose by the Civic Chatbot company (<http://www.civicchatbots.com>). This company reserves the term specifically for conversations between authorities and civic entities.

Scenario 3: MallBot. The goal in this scenario is to gain an understanding of young people's opinions about current developments in the city, in places where they naturally spend time in groups.

A group of friends is hanging out in the new shopping mall that has become a place to meet after school. Karim (16 years), Maryam (17), Alisa (15), and Simon (15) are immigrants from different countries and have been living in Finland for 4-5 years. They speak Finnish well. They are all engrossed in their mobile devices, except for Alisa, who suffers from very poor eyesight and is listening to music instead. Suddenly a Pepper robot approaches the group and introduces itself as MallBot. It asks if they are interested in talking about the state of the public transportation in the city. They all agree, even though MallBot recognizes that Simon is a bit hesitant. MallBot asks them about their satisfaction with the current bus lines and also about their expectations concerning the new tram that is being built. Alisa mentions her special need for non-visual information in public transport, and MallBot asks Alisa for more details about her needs. MallBot also asks Simon for his opinion, as he has not actively participated in the discussion. After ten minutes of discussion, MallBot thanks them. MallBot shows in its display and also says out loud that the group can find the anonymised results of their discussions on a specific website next week.

In summary, Table 1 shows how these three scenarios involve various contextual aspects [12] and key characteristics included in Følstad et al.'s typology [9]. The diverse set of scenarios aims to present a broad picture of the potential capabilities (and limitations) of CivicBots to the study participants.

Table 1. Summary of contexts and characteristics for the three CivicBot scenarios.

	VirtualCouncilBot	EuroElectionBot	MallBot
Task context	Discussing legislative issues	Looking for candidates for voting	Giving opinions about local developments
Physical context	Any place	Home, own room	Mall, open space
Social context	Group of strangers (other young people)	None (alone), friends online	Group of friends, other people around
Technical context	Web service / discussion platform	Mobile app	Social robot
Følstad et al.'s typology [9]	Chatbot-driven and user-driven, long-term	User-driven, short-term	Chatbot-driven, short-term

4 Online Survey of Youth's Perceptions of Chatbots

The aim of this study was to gain understanding of young people's experiences and perceptions of chatbots, and more specifically of chatbots used for civic participation. The main research questions (RQ) were:

RQ1: *What are youth's experiences and expectations of chatbots?*

RQ2: *How do youth perceive the concept of CivicBots?*

In this section we first present the survey content and procedure (Section 4.1), and describe the survey respondents' profiles and their use of chatbots (4.2). The following two sections (4.2-4.3) present the results related to the two RQs.

4.1 Survey Content and Procedure

We designed an online survey with the aim of answering our two research questions. The survey was primarily qualitative, with some supporting quantitative questions. In the introduction of the survey, we defined chatbots as follows: *“A Chatbot is software – possibly embedded in a physical robot – that discusses with the user via written text or speech about, e.g., searching for information, making a reservation, or finding a product. Chatbots usually function in association with web services or mobile apps, such as bank services or net stores. Siri and other ‘intelligent’ help applications can be considered as chatbots.”*

There were two parts in the survey, the first focusing on user experiences of chatbots in general and the second on using chatbots for purposes of civic participation.

In the first part of the survey (related to RQ1) the questions were about general chatbot experiences and expectations: *How often have you used chatbots? What chatbots have you used? What good experiences have you had with chatbots? What bad experiences have you had? What are your perceptions of chatbots?* The last question contained six eight-scale semantic differential questions in the form *“I think that chatbots are...”* *useless – useful, unreliable – reliable, boring – interesting, difficult to use – easy to use, complex – simple and unhelpful – helpful* (adapted from Robot Attitude Scale [2]).

In the second part of the survey (related to RQ2), the respondents were first told that chatbots could also be used for helping people participate in various civic activities. They were then presented with the three scenarios described in Section 3 of this paper. After each scenario they were asked to rate their perception of the scenario with two seven-scale semantic differentials of *incredible – credible* and *uninteresting to myself – interesting to myself*. They were also asked to explain their ratings with a qualitative answer.

At the end of the survey were questions about respondents’ backgrounds, including their level of civic participation. The survey was in Finnish. We used Google Forms for the survey, and it was open between June 24th and September 3rd, 2019.

Data analysis. We analysed the qualitative data by coding it thematically in an iterative process. The thematic analysis was done for each main survey question data, first in a bottom-up manner and then via thematic grouping to form categories for user experiences and expectations (RQ1). Based on the qualitative data, we also quantified the types of chatbots used, good and bad experiences with chatbots, and expected chatbot characteristics. Mean and standard deviation (SD) values were calculated for chatbot experience ratings. For RQ2, a qualitative cross-scenario analysis was conducted for the open answers related to users’ perceptions of the three CivicBot scenarios.

4.2 Respondents’ Profiles and Use of Chatbots

Respondents were recruited via various mailing lists and personal networks, as well as through calls for volunteers from our earlier research. We received 54 valid responses to the survey. An additional four responses were omitted as outliers, because they gave a straight line of 1 scores for all questions and no answers to the open questions.

Respondent profiles. The average age of the respondents was 22.7 years, with a range of 16-27 and a mode of 25. The respondents included 27 women, 23 men, and two ‘others’; a further two did not want to indicate their gender. The respondents were Finnish speaking. Regarding their educational level, four were in high school, three had vocational education, and the remaining 44 were university students. Respondents’ civic participation was rather high, measured with a likert scale of 1-7 (disagree-agree) with questions *I am interested in politics* (mean 4.87, SD 1.76), *I often discuss timely events with my friends or family* (mean 5.24, SD 1.61), *I read / watch the news on timely events* (mean 5.46, SD 1.72), and *I vote / would vote in the next election* (mean 6.07, SD 1.49).

Chatbot use. 26 out of 54 respondents had used chatbots over five times, 17 had used them 2-5 times, 7 had used a chatbot one time, and 4 had not used chatbots.

The respondents had used a diverse set of chatbots. The 46 responses (out of 54) that mentioned chatbots the respondents had used previously included altogether 86 mentions of chatbots. Chatbots were used with a wide range of everyday tasks and services. The most often used bots related to banking (18 mentions), using Siri or Google Assistant (13), online stores (12), student housing (8), insurances (7) teleoperator and authorities (4 each). Other uses of chatbots were mentioned for finding of election candidates, messaging, IT helpdesk, wellbeing counselor, airport service, driving school and software help.

4.3 Youth’s Experiences of and Expectations for Chatbots

Respondents reported a range of experiences with currently existing chatbots, both good and bad. Figure 1 presents the thematically categorised experiences.

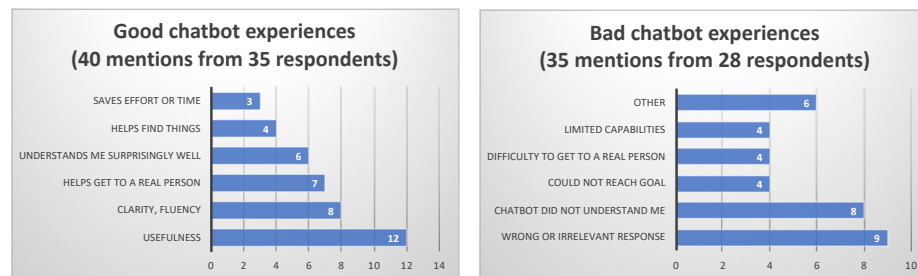


Fig. 1. Good and bad experiences with chatbots.

Good experiences. **Usefulness** was the most commonly reported experience. ‘The chatbot linked me to a relevant web page where there was additional information’ (Respondent 43, R43). Many chatbot experiences were **clear and fluent**. ‘The chatbot for the post office gave me clear instructions for sending a parcel. The service was fluent and fast’ (R6). Many respondents felt the best way of getting help was to **get to a human customer service**. ‘The best experience was when the chatbot gave me the contact information to a real person’ (R7). Positive experiences also came from chatbots **understanding the user surprisingly well**. ‘Google Assistant keeps a sensible conversational continuum and understands questions in the conversational context’ (R26). Chatbots also **help find things** and **save time and effort**.

Bad experiences. The most commonly reported bad experience was with chatbots that gave **wrong or irrelevant responses**. ‘Bank chatbot did not work, it did not understand my issue and repeated same things several times. I could not take care of my issues’ (R6). This example also illustrates the problem of **not accomplishing one’s goal**. Further problem areas included **the bot not understanding the user** and not connecting **the user to a real person**. Such experiences can lead to strong feelings of frustration. ‘The bot did not understand the sentence but you had to give it certain keywords. You could not call a customer service person and the bot did not even understand that it does not understand. I got so frustrated with the bot that I did not deal with this company anymore’ (R56). Other issues included **chatbots that are too ‘pushy’**. ‘Chatbots that attack you every time you go to a new web page are really irritating’ (R24). Chatbots were also criticised for faking **that they were a real person**, thereby causing **privacy concerns**. ‘It is most irritating when chatbots present themselves as “Elina” or some other fake name, especially when sometimes the information you have to provide is very personal and easy to misuse’ (R36). **Limited capabilities** of chatbots also caused bad experiences.

Chatbot experience ratings. Respondents rated chatbots based on their own experiences. These ratings were provided on a scale with the values 1-8 in order to generate responses that were not neutral; additionally, a ‘cannot estimate’ response was possible. The following mean and SD values were given: ‘I think that chatbots are...’ *useless – useful* (mean 5.48, SD 1.64); *unreliable – reliable* (mean 4.44, SD 1.47); *boring – interesting* (mean 5.04, SD 1.89); *difficult to use – easy to use* (mean 5.72, SD 1.93); *complex – simple* (mean 5.78, SD 1.71); and *unhelpful – helpful* (mean 4.76, SD 1.89). In this respondent sample, reliability was rated the lowest, while usefulness, ease of use, and simplicity were rated highest. These ratings are in line with the categories shown in Figure 1.

Expected chatbot characteristics. Figure 2 shows the categorisation of good characteristics participants expect from chatbots. These are further elaborated below.

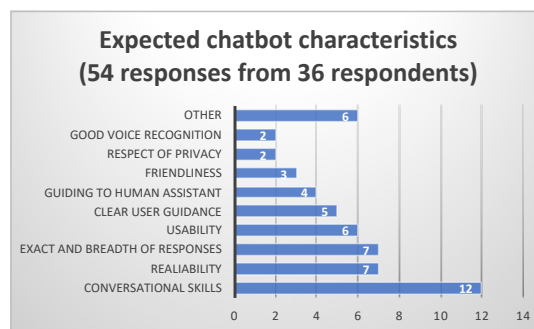


Fig. 2. Expected chatbot characteristics

Good **conversational skills** is a major requirement. ‘Chatbots need to be able to understand lots of words from different dialects. It would be good also to be able to direct the conversation with follow-up questions if the bot does not immediately

understand what the user is after' (R10). Chatbots should offer **clear user guidance**. *'The user should be easily able to understand what services the bot offers and how the user can "order" a particular service. For example a visible list of keywords that guarantees certain functionality'* (R12). **Reliability** and **guiding the user to a real person** are also expected, when the chatbot cannot provide a solution. *'Diverse set of questions, properly taught chatbot, and not a bot that only understands the simplest questions and avoids taking you to the proper customer service'* (R13). **Respect for privacy** is an important factor also with chatbots. *'There should be a clear message that your conversations are protected and will not be distributed outside of company X'* (R36). The 'Other' category includes further desired characteristics such as *use of humour, should make it clear that they are a bot, and suitably narrow scope*.

4.4 Youth's Perceptions of CivicBots

In this section we present the results related to RQ2, i.e., how do respondents react to the idea of CivicBots based on the three scenarios presented to them in the survey. Based on our qualitative analysis of the responses to the question *'Please justify why you think this scenario is un/believable or un/appealing'*, the following sections summarise the main issues that came up with the individual scenarios.

VirtualCouncilBot (Scenario 1). The positive aspects of this scenario included everyone's opinion being heard, the possibility that the bot could provide new perspectives, and the possibility that this kind of chatbot could motivate and activate people in civic engagement. *'The bot can encourage people to think of a topic from new perspectives that would not otherwise occur to them'* (R22). The idea of having the bot summarise the discussion was considered valuable. It was also considered technically feasible and exciting because of its AI aspects. On the negative side, some respondents felt that the bot might restrict discussions, and that it might irritate or stress out some people if the bot were to ask them something directly. *'It is not credible that inactive youth could be motivated to participate in the conversation'* (R16). Some respondents considered the added value of the chatbot to be minimal as compared with filling out a form. A critical consideration for the concept was that the bot should not replace possibilities for connecting with human experts, e.g., decision makers. *'It feels a bit weird that a facilitator would be replaced with a bot. It gives an impression that law makers don't care about young people's viewpoints that much, and that they don't want to spend their time communicating with this group'* (R51).

EuroElectionBot (Scenario 2). CivicBot's purpose in this scenario was considered important and positive because it may help youth form opinions more effectively than traditional voting-advice web services. *'The chatbot could increase my interest in finding a suitable candidate, because I could ask it directly about unclear issues'* (R29) and that *'If the bot tried to collect information about the values of the humans and suggested candidates to the user, this would be interesting'* (R56). Such a chatbot could be fun to use and it could excite youth to vote. *'The chatbot would offer a more adaptive version [compared to surveys] that could affect voting activity'* (R23). The negative viewpoints concerned the fact that politics is a difficult topic to cover because of its multifaceted nature and the potential bias of the bot in presenting the election candidates. *'This is an interesting thought, but I feel that the candidates proposed by the bot would not necessarily be reliable, or they could be "fiddled" with*

[by the developers]' (R38). In practical terms, to reduce users' effort, such single-use functionality should not be an app (that needs to be installed) but a web service.

MallBot (Scenario 3). The positive aspects of this scenario included the potential for better inclusion and offering a channel without direct human contact. CivicBot could be a good way to elicit the opinions of a broad group of people, including introverted ones. *'The idea of a bot that takes also quiet persons into account is especially good, because it makes it possible to listen to them also'* (R2). Many young people may be more eager to speak and be honest with a robot than with a human being. On the negative side, many respondents felt that the bot should not try to involve people who do not want to participate, and in this respect the robot was seen as similar to a face-to-face fundraiser, with a very negative connotation. *'Finns get anxious so fast if someone comes to talk to them in public places. Face-to-face fundraisers are everyone's worst nightmare. Personally I would love this experience'* (R7). The context was considered both as a positive opportunity to reach the youth and also as risky because of the noisy environment and the problems that such robot could cause for people with vision and hearing impairments. Some respondents worried that the robot might be harassed or get broken. *'The robot would probably be broken quite fast and some people would not reply to it appropriately'* (R1). Some respondents considered this to be a utopian scenario. They doubted that robots would be able to move on wheels or have any kind of emotional intelligence. Of all three scenarios, the credibility and viability of this third scenario were criticised the most.

Cross-scenario analysis. The responses concerning the three uses of CivicBots and their interest and appeal were analysed across the scenarios. The findings reveal both positive and negative themes in connection with the use of CivicBots for youth participation. (VC=VirtualCouncilBot, EB=EuroElectionBot, MB=MallBot)

Positive themes across the scenarios are:

Empowerment and advancing equality. Using CivicBots offers the potential to broaden young people's perspectives. *'The bot can motivate young people to think about a topic from a perspective that would otherwise not occur to them'* (R22, VC). Furthermore, CivicBots can motivate a broad spectrum of youth to participate in civic activities, including more introverted and less active young people. *'It's a plus that the bot can take the more quiet people into account'* (R8, MB).

Exciting interactions. CivicBots can be helpful and understanding, and even fun. CivicBots can also adapt to users' behaviour. *'Raising discussion in a way that is pleasant to the target group is really good! However, the formulation of the questions must be objective'* (R14, EB). Chatbots can also generate curiosity about the interaction, which may further raise interest in the subject of the conversation.

Better than humans. Bots may feel more approachable than a human, especially for sensitive topics, and youth may be more honest with a bot than with a human. *'This can be an easier way to get feedback, and it can also be easier to approach than a real person'* (R25, MB).

Usefulness and novelty. CivicBots are a new way to reach young persons, and they are suitable in many contexts. They may help youth form opinions on civic issues. They are technically interesting and offer mostly credible means to support the kinds of goals and situations described in the scenarios. *'Before I met Replika [a*

chatbot offering support for young people's mental health] I would have been more doubtful but now I believe that chatbots can be really intelligent and useful. [...]Bots are increasingly timely and I believe they can offer all kind of benefits in the future. And entertainment, even companionship?' (R34, VC).

Negative themes across the scenarios are:

Unpleasant interactions. CivicBots' *proactiveness* may irritate users, or they may seem generally *unattractive*. CivicBots may *appear culturally inappropriate* or poorly matched with young people's conversational styles. As one respondent put it, *'If the chatbot poses questions directly to an individual it could be quite irritating/stressful for young people'* (R7, VC).

Lack of trustworthiness. Issues related to trusting CivicBots include *privacy* and the *fear of discussions being shared without consent*. *'The bot posting a summary online without asking the participants if it's okay is VERY CONCERNING'* (R2, MB). There were also many doubts about the *bias of the bot*. Bots may be *misleading or restrict discussion* without users even knowing about it: *'If the programming of the bot is not unbiased, it could lead voters in a certain direction'* (R20, EB).

Inability to persuade inactive youth to participate. Users may give *inappropriate* or *'nonsense'* answers if they do not feel motivated to cooperate. CivicBots *should not try to force anyone to participate*. *'It is not credible that inactive youth could be motivated to join in the discussion'* (R13, VC).

Uselessness or unfit for task. Some respondents thought that CivicBots offer *minimal added value to current alternatives*. There were doubts of bots *not being able to handle a broad set of perspectives* in discussions, or to *keep up long-term discussions*. CivicBots *should not replace human interactions* in civic participation. *'Why would there not be a human being in this situation?'* (R51, MB).

Unsuitability for context. Especially in the case of a physical robot, *people may mishandle the robot physically or verbally*. *'The bot would probably be broken quite fast and probably some of the people would answer the bot in inappropriate ways'* (R1, MB). *Over-proactive behaviour* of CivicBots may also cause frustration in certain task contexts. *'Finns get anxious so fast if someone comes to talk to them in public places. Face-to-face fundraisers are everyone's worst nightmare'* (R7, MB).

Practical unfeasibility. For some respondents CivicBots seem *unbelievable or far-fetched, technically, economically, and practically*.

5 Discussion

Enabling civic engagement for a broad spectrum of people is an essential element of societal inclusion and wellbeing. As was pointed out in introduction, there are known obstacles for youth's civic participation [14]. CivicBots may offer one way to tackle these obstacles by proactively raising young persons' interest and knowledge of potential channels for participation.

The presented findings reveal positive and negative user perceptions of chatbots in general and CivicBots in particular. Regarding general chatbot experiences (RQ1), many of the issues related to chatbot use and user needs were similar to those identified in Brandtzaeg & Følstad's survey study [1], e.g., efficient assistance,

timeliness, and curiosity. In comparison to Yang et al.'s [24] survey results, our sample of young people brought up similar experiential issues, in particular, fluidity of interaction, pride in using novel technology, and fun. To our knowledge there is no previous research on the use of chatbots to help youth engage in civic activities (RQ2), so this paper presents an initial foundation for this line of research.

5.1 Opportunities and Pitfalls of CivicBots

Our findings indicate that CivicBots have the potential to enhance young people's civic engagement; but the respondents also brought up many doubts about and critiques of the concept. Here we summarise opportunities and pitfalls that we think should be considered when designing and implementing chatbots for youth for the purpose of motivating them to participate in civic activities.

Opportunities of CivicBots:

- Raising users' curiosity and interest in civic activities and hence motivating people to learn and become more empowered members of society.
- Motivating diverse types of youth to participate and hence advance equality.
- Lowering the threshold of participation by bringing CivicBots to users' task contexts and opportune physical contexts.
- Approachability and potential of helping youth engage with issues in relation to which human contact may seem difficult.
- Enabling emotional human-chatbot interaction and potentially increasing commitment to a social cause.

Pitfalls of CivicBots:

- Insufficient level of intelligence of the chatbots and user frustration that may follow.
- Not adapting appropriately to conversation styles and preferences that may vary with different users, e.g. through over-proactive chatbot behaviour.
- Perceived lack of trustworthiness and confidentiality (privacy) of the interactions, especially with very personal information.
- Direct contact with human stakeholders (e.g. decision makers) is diminished.
- Practical challenges in terms of teaching CivicBots to act in unbiased and respectful ways.

5.2 Limitations of the Study

The online survey sample was rather small (54) and culturally narrow. The age group of the participant sample was somewhat biased towards the upper limit of the target group of 16-27 years. These issues may have an effect on the range of experiences and issues that were identified. Nonetheless, the qualitative findings offer novel insights into young people's chatbot and CivicBot preferences. A methodological limitation is that a survey about written scenarios may not allow for deep understanding of actual experiences with not-yet-existing interactions. Contextual studies with real prototypes would provide more solid insights into the phenomena of

chatbot interaction. Still, we believe that the qualitative findings indicate areas that need to be considered when designing CivicBots for youth.

6 Conclusion and Future Work

In this paper, we have proposed using chatbots – CivicBots – to help engage young people in civic activities. The online survey we used to evaluate three CivicBot scenarios revealed both positive and negative issues that can be used to guide chatbot design in this context. We believe chatbots are a promising HCI approach to raising curiosity about issues, provoking thought processes, and providing information in an interesting and human-centred way. Chatbots can advance the understanding and involvement of different types of user groups and hence increase social equality.

In the ALL-YOUTH project, we are developing *Virtual Council*, a web-based service for which we may implement a chatbot similar to the one described in Scenario 1. We will deploy and evaluate Virtual Council in the legislative commenting round of the new environmental strategy and related laws developed in Finland in 2020. Ways of implementing the other scenarios are also under consideration. They could be developed in combination with gamification techniques [10], such as challenges and rewards provided by chatbots. Accessibility of the services will also be addressed; for example, a speech-based chatbot could provide support for young users with sight impairments.

On the theoretical side, the typology of Følstad et al. [9] could be developed further to cover interactional dimensions that may be significant in this context, such as *entertaining – practical* (or *hedonic – pragmatic*), *single user – multi-user* chatbots, and *evolving (capable of learning) – static bots*. We are also interested in defining *user experience goals* for experience-driven design [11] of CivicBots for different usage contexts and user groups.

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References

1. Brandtzaeg, P. B., & Følstad, A. (2017). Why people use chatbots. In *International Conference on Internet Science*, 377–392. Cham, Switzerland: Springer.
2. Broadbent, E., Tamagawa, R., Kerse, N., Knock, B., Patience A., & MacDonald, B. (2009). Retirement home staff and residents' preferences for healthcare robots. In *RO-MAN 2009 - The 18th IEEE International Symposium on Robot and Human Interactive Communication*, 645–650. Toyama, Japan.
3. Carroll, J.M. (2000). Five reasons for scenario-based design. *Interacting with Computers* 13(1), 43–60.
4. Checkoway, B. (2011). What is youth participation? *Children and Youth Services Review*, 33(2), 340–345. <https://doi.org/10.1016/j.chilyouth.2010.09.017>.

5. Crutzen, R., Peters, G.-J. Y., Portugal, S. D., Fisser, E. M., & Grolleman, J. J. (2011). An artificially intelligent chat agent that answers adolescents' questions related to sex, drugs, and alcohol: An exploratory study. *Journal of Adolescent Health*, 48(5), 514–519.
6. Dale, R. The return of the chatbots. *Natural Language Engineering*, 22(5), 811–817.
7. Fitzpatrick, K. K., Darcy, A., Vierhile, M. (2017). Delivering cognitive behavior therapy to young adults with symptoms of depression and anxiety using a fully automated conversational agent (Woebot): A randomized controlled trial. *JMIR Mental Health* 4(2),
8. Følstad, A., & Brandtzaeg, P. B. (2017). Chatbots and the new world of HCI. *Interactions* 24(4), 38-42. <https://doi.org/10.1145/3085558>.
9. Følstad A., Skjuve M., & Brandtzaeg P.B. (2019). Different chatbots for different purposes: Towards a typology of chatbots to understand interaction design. In S. Bodrunova, et al. (Eds) *Internet Science*. INSCI 2018. LNCS, vol 11551, Cham, Switzerland: Springer.
10. Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. *Proc. HICCS 2014*, IEEE.
11. Hassenzahl, M. (2010). *Experience design: Technology for all the right reasons*. Morgan & Claypool Publishers.
12. ISO 9241-210:2019 (2019). *International Standardisation Organisation*. <https://www.iso.org/standard/77520.html>
13. Kretzschmar, K., Tyroll, H., Pavarini, G., Manzini, A., & Singh, I. (2019). Can your phone be your therapist? Young people's ethical perspectives on the use of fully automated conversational agents (chatbots) in mental health support. *Journal of Biomedical Informatics Insights*, 11, 2019, SAGE.
14. Meriläinen, N., Pietilä, I., & Varsaluoma, J. (2018). Digital services and youth participation in processes of social change: World Café workshops in Finland. *2018 ECPR General Conference*, Hamburg: Hamburg University.
15. Michels, A., & De Graaf, L. (2010). Examining citizen participation: Local participatory policy making and democracy. *Local Government Studies* 36(4), 477-491.
16. Morgan, J., Paiement, A., Williams, J., Wyner, A., & Seisenberger, M. (2018). A chatbot framework for the Children's Legal Centre. *Frontiers in Artificial Intelligence and Applications*, 205-209.
17. Page, L., & Gehlbach, H. (2017). How an artificially intelligent virtual assistant helps students navigate the road to college. *AERA Open* 3(4), 2017, SAGE.
18. Persson, H., Åhman, H., Yngling, A., & Gulliksen, J. (2014). Universal design, inclusive design, accessible design, design for all: Different concepts – one goal? On the concept of accessibility – historical, methodological and philosophical aspects. *Universal Access Information Society*, 14, 505-526.
19. Pietilä, I., Varsaluoma, J., & Väänänen, K. (2019). Understanding the digital and non-digital participation by the gaming youth. *Proc. of INTERACT 2019*, Cham: Springer.
20. Rexhepi, A., Filiposka, S., & Trajkovic, V. (2018). Youth e-participation as a pillar of sustainable societies. *Journal of Cleaner Production*, 174, 114-122.
21. Skjuve, M., Haugstveit, I. M., Følstad, A., & Brandtzaeg, P. B. (2019). Help! Is my chatbot falling into the uncanny valley? An empirical study of user experience in human-chatbot interaction. *Human Technology*, 15(1), 30–54.
22. Vlachokyriakos, V., Crivellaro, C., Le Dantec, C. A., Gordon, E., Wright, P., & Olivier, P. (2016). Digital civics: Citizen empowerment with and through technology. *Proceedings of CHI'16 (Extended Abstracts)*. New York, NY: ACM.
23. Xu, A., Liu, Z., Guo, Y., Sinha, V., & Akkiraju, R. (2017). A new chatbot for customer service on social media. *Proceedings of CHI'17*, 3506-3510. New York, NY: ACM.
24. Yang, X., Aurisicchio, M., & Baxter, W. (2019). Understanding affective experiences with conversational agents. *Proceedings of CHI'19*, Paper 542. New York, NY: ACM.