

Self-trust, Self-efficacy and Digital Learning

Natasha Dwyer, Stephen Marsh

▶ **To cite this version:**

Natasha Dwyer, Stephen Marsh. Self-trust, Self-efficacy and Digital Learning. 11th IFIP International Conference on Trust Management (TM), Jun 2017, Gothenburg, Sweden. pp.110-115, 10.1007/978-3-319-59171-1_9 . hal-01651166

HAL Id: hal-01651166
https://inria.hal.science/hal-01651166

Submitted on 28 Nov 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

Self-trust, Self-Efficacy and Digital Learning

Natasha Dwyer[1], Stephen Marsh[2],
[1] Victoria University, Melbourne, Australia
natasha.dwyer@vu.edu.au
[2] University of Ontario Institute of Technology, Oshawa, Canada
stephen.marsh@uoit.ca

Abstract. Self-trust is overlooked in trust research. However, self-trust is crucial to a learner's success in a digital learning space. In this paper, we review self-trust and the notion of self-efficacy used by the education researchers. We claim self-efficacy is self-trust. We then explore what self-trust and its expression means to one group of learners and use this data to provide design suggestions for digital learning spaces that improve students' self-trust.

Keywords: self-trust, self-efficacy, trust enablement, digital learning

1 Introduction

Self-trust, informed confidence that one can accomplish a specific task, is key to the success of learners. In this paper, we explore how self-trust can be enabled in the design of a digital learning environment. We start by exploring the nature of self-trust and self-efficacy. We then turn to consider how students express their self-trust and point of view in a digital learning environment. The paper closes with suggestions for designing digital learning spaces that improve students' self-trust.

2 Background Research

The notion of trusting oneself has been neglected by the digital trust research community. When considering the social aspects of trust, the focus is usually on the notion of trust from one party to another, from an individual to a network of people or to a technological system/device. There are some, however, who consider self-trust. Hardin [1] identifies self-trust with the question 'What can I depend on myself to do'? Dasgupta [2] briefly mentions whether one can trust one selves and outlines some of the safeguards society puts in place to protect those who cannot trust themselves. Abdul Rahman and Hailes [1] refer to 'basic trust' and a "pervasive attitude toward oneself and the world". There is an emphasis on one's disposition to trust as a basis for interaction with others, rather the one's trust in oneself.

According to Gibbs [3], self-trust is trust in one's own ability to make decisions on one's own terms with the understanding that one's judgment is valid. This definition builds on Cofta's [4] definition of trust as a relationship within which a trustor is

confident that another party (the trustee), to whom a trustor is in a position of vulnerability, will respond in the trustor's interests, according to, which has traction in the trust research area. Self-trust is the *informed* confidence one has in oneself. If an individual is lacking in self-confidence then he/she is excessively vulnerable. On the other hand, too much self-confidence means that an individual may not comprehend risk appropriately [5]. Just like trust in others, trust in ourselves can be misplaced. Self–trust has a social component; there needs to be some form of validation with others in order for individuals to calibrate their self-efficacy [6] and self-trust does not preclude trust in others [7]. It is necessary for one to understand one's strengths, competencies and beliefs [7]. An important component of trust is that it is intuitive [8]. Individuals are usually highly effective at managing trust in the context of their everyday life and we see in our study that our participants can articulate what they need to express their self-trust and engage others to trust them.

According to Bandura [9], self-efficacy is a 'belief and confidence' that one has to accomplish certain sorts of work, such as the planning and completing of tasks. Self-efficacy is shaped by previous accomplishment, social influence and an individual's sense of agency[7]. Martinez-Maldonado et al. [10] add that experience plays an important role in one's perception of oneself as well as knowledge. We claim that self-efficacy is intrinsic part of self-trust.

Self-trust/efficacy is a result that universities hope they enable for their graduates, as indicated by the 'graduate outcomes' universities set for themselves. High self-trust and efficacy allows university students to not only make crucial decisions and set life goals but to reach them [11]. Trust level to oneself with first-year students sharply raises in connection with their ability not only to set the vital life goals but also to reach them. If the design of an online system improves a student's self-efficacy then a student is more likely to report higher satisfaction with the system [10]. If an individual has high self-efficacy, then this is a predictor of the individual completing a MOOC (a massive open online course) [12]. Perhaps a role for traditional university education is to build individuals' self-trust and efficacy so that they are in a position to complete endeavours such as MOOCs.

3 Methodology

Trust is a notoriously challenging concept to study and the notion of self-trust is arguably more personal and thus difficult to access. However, researchers need to look at what users actually do in real life contexts [13]. Sometimes asking participants to define a concept like trust does not gather in-depth responses as the task is hard work for participants. It is difficult for participants to understand what the researcher means [14]. For instance, it is likely if a survey about game design asks "What is trust in this context?', the question is likely to be avoided by participants. Instead, gathering data in a more indirect fashion has the potential to be successful.

We gathered data from a brief survey for students embedded in a classroom activity, to understand what self-trust means for students in the context of e-learning. These students were undertaking a postgraduate unit 'Analyzing the Web and Social Networks' at Victoria University, Australia. The class has 42 students, 19 males and 23 females.
Students are required to undertake an oral presentation at the end of semester to communicate their findings to their peers. Peer judgment and acceptance, as part of an industry information sharing exercise, were central to the exercise. The task itself of creating a presentation can foster the development of creative self-efficacy because the process develops confidence with tools, developing ideas, presenting arguments to others and responding to feedback[15].

Two options were given to students about the delivery of their findings: presenting in person during class time or submitting a video presentation of their performance. In our short survey students were asked to explain why they made their choice. Our participants were asked "Why did you choose to present in person or create a video (circle the one you chose then quickly tell us why)".

4 Analysis

As Roghanizad [8] argues, individuals are usually highly effective at understanding the dynamics of trust in their everyday lives and our participants gave us a clear explanation of their choices around self-trust and technology. The participant's responses reflect the notion of 'functional advantage' (outlined in technology acceptance models see [16]). Users of technology are not inherently loyal to one form of technology or mode of interaction, the decision depends upon what is on offer. Users are aware of the possibilities technology offers and want to use what works better for their particular context [16]. In the responses provided by the participants, we see them weigh up how technology can help or hinder them express their self-trust and also gain the trust of their peers. Jervis [17] says simply that the reason why different users have different preferences is because people come from wide ranging experiences, bearing different personalities and opinions.

Some participants chose to present in class because they believe it is easier to control the presentation:

> I prefer to present in person because I can get a better sense of what the room is finding most interesting - can emphasise of skim over as required. Can also modify and monitor my own energy as appropriate. Basically I feel as though I have more control of the presentation.

Trust and control are counterparts [18], one can compensate for absence of the other. As Knight[19] states autonomy is safeguarded when students are given "control over the right things at the right time." On the other hand, other participants thought that video-mediated presentation would present them in the most confident light. Confidence, as Cofta [4] argues, is a key component of trust. If a person can make others confident of their abilities, then that person is trusted. A participant in our study said:

> I prefer to make the presentation on video rather than in person because I feel more confident. I'm a shy and introverted person and speaking in front of an audience or in public, it is a bit uncomfortable and I feel stage fright.

Another added that the asynchronous nature of a video presentation changes the type of judgments that are made because the audience is not forced to watch you:

> I chose this subject because it really interests me, but I am just a 'beginner' in this scenario, and given the high level and experience some students have in class, it was really difficult for me to come up with an interesting subject to present for them, so I thought the video was a good idea, as it gives the freedom to watch it only to those who may be interested in the topic.

Other participants raised the issue of authenticity, a concept very close to the notion of trust. Those looking to trust, automatically synthesise the evidence to trust they are presented with, filtering for authenticity and assessing the credibility of the information [20]. Assessing the credibility of the information, the participants realized they can control how authentic, trustworthy and believable they can appear to be.

> Personally, I find it more authentic to present in person, in front of a real audience. Even more so, that I believe they (the audience) could take something out of my outcomes.

> I like talking in front of people because I like interactivity and dialog. It feels more real than just a youtube video. If there's real (live) singing vs. lip sync, I would choose live singing.

It is interesting to note, that even though the individuals in our study are regarded as 'digital natives', some of our participants prefer 'real life' over digitally mediated interactions. Some participants were interested in in-class presentations because there is a more personal level of interaction that allows instant feedback and flow, echoing Luhmann's [21] well-known theory on the links between growing familiarity and

trust. The more time and interactions individuals have with each other, the more likely that trust will develop between people.

> I would like more interaction with the students. I feel like I am talking to the air if doing my presentation in a video. Presentation in class makes me feel more energy.

> Easy to contribute to the conversation in case someone has a question or needs clarification.

> I am more comfortable presenting in person as its more interactive, helping in getting reactions, input feedback on your presentation.

As indicated by the responses above, many participants who chose to present in class raised the issue of being able to ask questions. The ability to query promotes trust as. asking for clarification shows a need to understand. Answering queries breeds understanding and engagement [22]. Our participants understand this dynamic:

> So that my fellow classmates could see and listen to my presentation topic, also gives people a chance to ask me questions about my topic.

> Video is not interactive, no questions allowed. It's a better 'sound check' format, i.e.: live reaction.

Another participant added that the topic of a presentation itself should play a role when deciding to present in person or using technology:

> It needs to be in person because I'm sharing from my own experience.

And finally, practical considerations also play a role in the choices students make, which are issues designers of online spaces should not overlook:

> The clarity of voice and image is guaranteed in a classroom presentation.

> We have decided to team up for the presentation but one of us is not available on the day/time of the actual presentation. It is difficult to coordinate time together. Eliminating the date of the actual presentation in the mix gives more freedom in scheduling the recording session. We are both shy and filming the presentation took out some of the anxiety of presenting in class.

In the responses from participants, there are suggestions to improve the design of digital learning spaces so that they enable self-trust and trust. For instance, our participants tell us that an element of control is required in an online environment if the space is to allow them to establish trust with their peers. Many of our participants choose to present themselves in class, in person, rather than using digital tools to present their ideas, so this may mean that they find the current offerings within digital learning spaces fail to meet their needs.

The ability to query is rated as an important element in a trust interaction, according to our participants. The current means to ask questions in online spaces does not seem to be satisfactory for our participants and they seek alternatives. Students also wish to develop familiarity with each other and also demonstrate their authenticity to each other, which are long-term design challenges for the creators of online spaces.

Some of the design features we suggest above for trust enablement are 'grand challenges'. Currently there are teams of designers who are working on these long-term goals. In the short-term, we propose the use of a questionnaire to be implemented as part of the digital learning experience. The aim of the questionnaire is to help students use technology so that it suits their preferences. Once submitted, the questionnaire could give students automated suggestions about the advantages and disadvantages of different technology use, guide them through their choices and provide examples of the choices students like them have made in the past.

5 Conclusion

Self-trust is a key attribute for learners in digital learning spaces. Education researchers use a similar concept, self-efficacy, which we claim is self-trust. In this paper, we explore the choices one group of participants make to express their self-trust in digital learning spaces. The data gathered suggests ways to improve the design of digital learning environments so that they enable self-trust. Our participants tells us that an element of control can enable self-trust. A means to display authenticity can also assist, as can the facility to ask and answer questions. Some of these design features are 'grand challenges' for the creators of digital learning spaces. As a solution for current environments, we suggest the implementation of a questionnaire which can guide students, based on their preferences, towards modes of interacting that enable self-trust.

References

1. Abdul-Rahman, A., Hailes, S.: Supporting trust in virtual communities. In: System Sciences, Proceedings of the 33rd Annual Hawaii International Conference on, pp. 9 pp. vol. 1. IEEE, (2000)
2. Dasgupta, P.: Trust as a commodity. Trust: Making and breaking cooperative relations 4, 49-72 (2000)
3. Gibbs, P.: Competence or trust: the academic offering. Quality in higher education 4, 7-15 (1998)
4. Cofta, P.: Trust, complexity and control: confidence in a convergent world. John Wiley & Sons (2007)
5. Nooteboom, B.: Social capital, institutions and trust. Review of social economy 65, 29-53 (2007)
6. Nys, T.: Autonomy, trust, and respect. Journal of Medicine and Philosophy 41, 10-24 (2016)
7. Govier, T.: Self-Trust, Autonomy, and Self-Esteem. Hypatia 8, 99-120 (1993)
8. Roghanizad, M.M., Neufeld, D.J.: Intuition, risk, and the formation of online trust. Computers in Human Behavior 50, 489-498 (2015)
9. Bandura, A.: Self-efficacy: toward a unifying theory of behavioral change. Psychological review 84, 191 (1977)
10. Martinez-Maldonado, R., Anderson, T., Shum, S.B., Knight, S.: Towards Supporting Awareness for Content Curation: The case of Food Literacy and Behavioural Change. (2016)
11. Krishchenko, E., Shevyreva, E., Tushnova, Y.: Subjectivity formation in the system of higher education. In: СБОРНИКИ КОНФЕРЕНЦИЙ НИЦ СОЦИОСФЕРА, pp. 109-111. Vedecko vydavatelske centrum Sociosfera-CZ sro (Прага), (2016)
12. Zhu, M., Bergner, Y., Zhang, Y., Baker, R., Wang, Y., Paquette, L.: Longitudinal engagement, performance, and social connectivity: a MOOC case study using exponential random graph models. In: Proceedings of the Sixth International Conference on Learning Analytics & Knowledge, pp. 223-230. ACM, (2016)
13. Schilke, O., Cook, K.S.: Sources of alliance partner trustworthiness: Integrating calculative and relational perspectives. Strategic Management Journal 36, 276-297 (2015)
14. Dwyer, N.: Traces of digital trust: an interactive design perspective. Victoria University (2011)
15. Martin, C., Nacu, D, Pinkard, N: Revealing Opportunities for 21st Century Learning: An Approach to Interpreting User Trace Log Data. Journal of Learning Analytics 3, 2 (2016)

16. Chang, Y.-Z., Ko, C.-Y., Hsiao, C.-J., Chen, R.-J., Yu, C.-W., Cheng, Y.-W., Chang, T.-F., Chao, C.-M.: Understanding the Determinants of Implementing Telehealth Systems: A Combined Model of the Theory of Planned Behavior and the Technology Acceptance Model. Journal of Applied Sciences 15, 277 (2015)
17. Jervis, R.: Perception and misperception in international politics. Princeton University Press (2015)
18. Bijlsma-Frankema, K., Costa, A.C.: Understanding the trust-control nexus. International Sociology 20, 259-282 (2005)
19. Knight, S., Anderson, T.D.: Action-oriented, Accountable, and Inter (Active) Learning Analytics for Learners. In the 6th International Learning Analytics and Knowledge Conference, pp. 47-51. (2016)
20. Gambetta, D., Bacharach, M.: Trust in signs. Trust and Society, New York: Russell Sage Foundation 148-184 (2001)
21. Luhmann, N.: Familiarity, confidence, trust: Problems and alternatives. Trust: Making and breaking cooperative relations 6, 94-107 (2000)
22. Marsh, S., Dwyer, N., Basu, A., Storer, T., Renaud, K., El-Khatib, K., Esfandiari, B., Noël, S., Bicakci, M.V.: Foreground trust as a security paradigm: Turning users into strong links. Information Security in Diverse Computing Environments, pp. 8-23. IGI Global (2014)