

Byte-sized edtech research



Interaction & Participation in Live Online Teaching

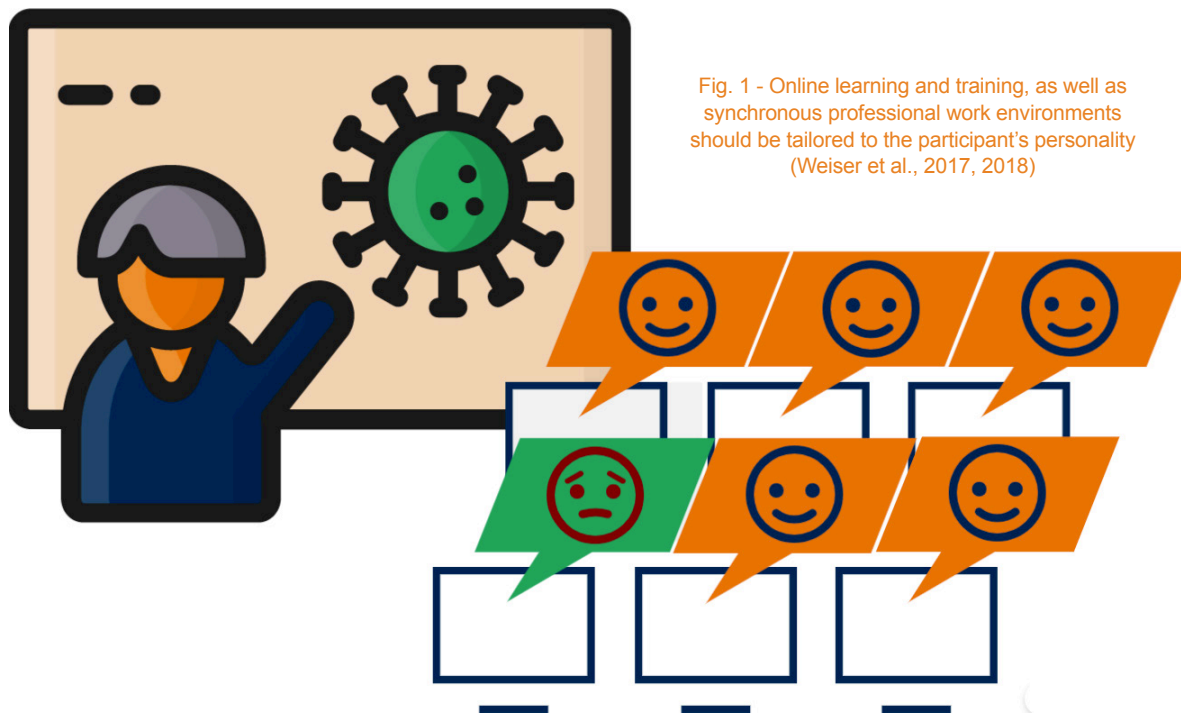


Fig. 1 - Online learning and training, as well as synchronous professional work environments should be tailored to the participant's personality (Weiser et al., 2017, 2018)

- With the availability of innovative technologies for **synchronous e-learning**, the difference between **online** and **face-to-face learning** has blurred, and the gap in **student achievement** previously found between the two modes is **decreasing** (Kuo 2016; Redpath 2012)
- In addition to the degree of '**medium naturalness**' (how close a technical communications solution feels to face-to-face communication), the following three factors play a pivotal role in determining the quality of the learning process: **the teaching-learning style, learner personality traits, and the degree of acquaintance between learners**
- For the **teaching-learning style**, the research literature suggests that the quality of online learning depends on the **quality of interactions** taking place during the **teaching-learning process**
- The sense of **community** created between participants during these interactions produces a **positive effect** on learners (Abrami et al., 2011; Digmann, 2016)
- Research also shows that **learners' personality traits** – as described in the **Big Five Personality Traits Model** – play a **crucial role** in determining the **level of their participation**
- **Two research reports** on the same experiment, examining the degree of **active participation** in (the under-researched setting of) **synchronous e-learning**, found the following:
 - The **instructor** has a **pivotal role** in **promoting learners' active participation** in the learning process
 - **Learner presentations** and **explicit encouragement from the instructor** increase participation, and **transferring the responsibility** from instructor to learners to **speak or initiate interactions** allows them, over time, to lead the lesson, and increases more **spontaneous participation in an audience of peers**
 - **Personality traits** have an impact on participation and effective learning. Adapting teaching methods to learners' **characteristics**, and allowing learners to **choose their own preferred method** from a variety of options, is emphasised
 - Tailoring online **learning and training**, as well as **synchronous professional work environments**, to the participant's personality, is important
 - Learning with advanced communication media, which enables simultaneous communication through different channels, imposes a **high cognitive load** on learners and **may impair the quality of learning** and the learning experience
 - Since the study this piece was based on was conducted under **synchronous** conditions, findings cannot be generalised to **asynchronous e-learning environments**. However, **they are generalisable to synchronous professional training** through webinars, as well as for the synchronous communication and collaboration of **virtual teams in the workplace**

01 What is Medium Naturalness Theory?

- Developed by Kock in 2005, **Medium Naturalness Theory** examines the characteristics of **communication channels** and compares those characteristics to **face-to-face communication**, which is considered to have the highest degree of **naturalness** for humans
- The theory describes five criteria for analysing **the degree of naturalness** of a communication channel:
 1. **Co-location** in a common **physical space**
 2. A level of **synchronicity** that allows **immediate** and **spontaneous response to stimuli**
 3. The possibility of **identifying** and **transmitting facial expressions**
 4. The possibility of **identifying** and **transmitting body language**
 5. The possibility of **receiving** and **transmitting natural speech**
- According to MNT, a decline in medium naturalness represents a **decline in its resemblance to face-to-face communication**. Such a decline typically leads to an **increase** in the **cognitive load** imposed on the learner, to greater **ambiguity in the conveyed message**, and to **lower psychological arousal** during the interaction – all of which contribute to a **decrease in learning effectiveness**. Research shows that communicating via media that supports **several input channels** (eg. simultaneous writing and speaking using textual chat and voice chat) is **usually associated** with these decreases (Blau & Caspi, 2008, 2010; Kock, 2005)
- In contrast, the **higher** the degree of media naturalness and resemblance to face-to-face communication, the more **effective** teaching-learning interactions tend to be (Kock 2005; Kock, Verville, and Garza 2007), hence, **effective e-learning should aim for this standard**

02 Zoom and Communication Channels

- In the two reports on which this piece is based, Zoom videoconferencing technology was used to examine the basic assumptions of the Media Naturalness Theory regarding **participation in synchronous lessons**. Zoom is an innovative platform for two-way videoconferencing, which enables learners and instructors to conduct **elaborate spontaneous** (both visual and verbal) **learning interactions** (Weiser et al., 2016a)
- The reports compared face-to-face, two-way videoconferencing, and one-way videoconferencing learning interactions, based on the criteria of the Medium Naturalness Theory. The communication channels are only similar in their **synchronicity** and the ability to **convey natural speech** - two of the five criteria for medium naturalness
- Face-to-face and two-way videoconferencing convey **all participants' facial expressions**, whereas one-way videoconferencing only conveys **the instructor's facial expressions**
- The **body language** criterion is **fully expressed** in face-to-face communication, while two-way videoconferencing only **partially conveys** the participants' body language, and one-way videoconferencing only **partially conveys the instructor's body language**
- Communication via one-way videoconferencing enables students to be **"invisible"** to the instructor and to their peers, while face-to-face and two-way videoconferencing both **do not afford visual anonymity**, and convey **some non-verbal social communication cues**

03 Personality Traits in Learners' Online Behaviour

- The **Big Five Personality Traits Model** (Costa & McCrae, 1992, 2008) consists of five personality traits: extroversion, neuroticism, conscientiousness, openness, and agreeableness, among which **extroversion-introversion** and **emotional stability-neuroticism** were found to be the most relevant in the analysis of **learners' behaviour in online environments**
- These two personality traits were reported in a previous study (Vasileva-Stojanovska, Malinovski, Vasileva, Jovevski, & Trajkovik, 2015) as **extremely important** in assessing **academic performance** and accounted for up to **43.6% of the variance** among K-12 students
- **Extroverts and Introverts**: an extrovert is a friendly person who seeks company, desires excitement, takes risks, and acts on impulse, whereas an introvert is a quiet, reflective person who does not enjoy large social events, prefers his or her own company, and does not crave excitement (Eysenck & Eysenck, 1975)
- Studies have shown that extroverts feel a similar **level of comfort** in **face-to-face** and in **online communication**, whereas introverts feel **more comfortable** in **online environments** which allow **lower exposure** and **reserved anonymity**
- **Emotional Stability-Neuroticism**: neuroticism is a measure of emotional stability, which manifests **at one extreme** as anxiety, moodiness, and low self-esteem (Eysenck & Eysenck, 1975)
- Emotionally stable individuals participated **more frequently** when communicating with the instructor in **instructor-student** and **student-instructor** interactions
- Neurotic individuals on the other hand, tending to **avoid participation in online activities**, participated **more frequently** with their **peers**, and their participation **may increase** in situations in which they receive **reassurance of their unique contribution to the community** (Cullen & Morse, 2011)
- Findings indicate there is a **potential disadvantage** in **learning effectiveness** for neurotic students using **low medium-naturalness technology**. This should be taken into account during the integration of **new technologies in learning**
- Follow-up studies in this area might reveal the relevance of **additional factors** in **online behaviour** and **online learning**, such as larger **class size** or **session duration**, **age** and **gender** (Amichai-Hamburger & Ben-Artzi, 2003), **motivation**, **technology**, or **user interface** (Malinen, 2015)