

Evaluating Online Security Training for Journalists Through the Lens of Learning Science

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Journalists are targets of computer security attacks because of the type, value, and sensitive nature of information that they share with sources, colleagues, and eventually the public. Though there are many computer security training modules specifically designed for journalists, most journalists still do not use many security tools [12]. A lack of adherence to learning science principles could be reducing the effectiveness of these trainings [11], and thus, we evaluated how well existing online security training modules for journalists conform to accepted learning science principles [11].

We find that none of the security training modules we evaluated conformed entirely to accepted learning science principles (see Table 1). From our findings, we suggest that improved training modules for journalists be founded upon these learning science principles. In particular:

Incorporate User Interaction. Online security training modules should offer interactive features to give trainees hands-on learning experiences and immediate feedback from the system. For example, after presenting information about how to use an encrypted email service, trainees could be asked to actually install an encrypted email service and send a dummy encrypted email to a training server.

Use Graphical Presentation. In forms such as comics or animated video, we recommend that training modules leverage graphical presentation, and provide an agent (e.g., a

graphical character) to guide users through security concepts and procedures.

Incorporate Learning Evaluation. A training module should let a user reflect on her learning, e.g., by being presented with a scenario that is common in her profession and then asked how she would use her learning to handle that situation in a secure and privacy-preserving way.

Leverage Personalization. We recommend identifying the motivation and prior knowledge of target users before designing a security training module. For example, *protecting sources* is one of the prime security concerns of journalists [12], and thus journalists may be motivated to take precautions against phishing attacks if they understand the possible consequences (e.g., failing to identify phishing emails could lead to accidentally revealing information about a protected source).

This formative research informs our eventual goal: to design an online security training module for journalists using learning science principles, through a collaboration among journalism, security, and HCI research communities.

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Table 1: Online Security Training Modules: Through the Lens of Learning Science Principles [●: Leverages a learning principle, ○: Does not leverage a learning principle, ◐: Partially leverages a learning principle, LD: Learning-by-doing, IF: Immediate Feedback, CP: Conceptual Procedural, C: Contiguity, P: Personalization, SAE: Story-based Agent Environment, R: Reflection].

Training Modules	Learning Science Principles						
	LD	IF	CP	C	P	SAE	R
APC [1]	○	○	●	○	●	○	○
FPF [2]	○	○	●	◐	●	○	○
CIJ [3]	○	○	●	◐	●	○	○
CPJ [4]	○	○	●	○	●	○	○
SKeyes [5]	○	○	●	●	●	◐	○
WeFC [6]	○	○	●	◐	●	○	○
FLD [7]	○	○	●	○	●	○	○
StoryMaker [8]	○	◐	●	◐	●	○	●
Internews [9]	○	○	●	○	●	○	○
EFF [10]	○	○	●	◐	●	○	○