Learning about NDSS through video – Evidence-based guidelines for effective instructional videos for a smooth transition into industry

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Non-destructive spectroscopic sensors (NDSS) are an innovative and highly useful group of tools that have a potential to considerably improve the food industry. Research and development are reaching the point where these laboratory-bound technologies can be implemented directly in the field, allowing the industry to apply them and put them into practice. However, widespread adoption of new technologies requires effective knowledge transfer, which means that people must first learn what these innovations can do and how to use them properly.

The COVID-19 pandemic brought many face-to-face meetings and training sessions to a standstill and highlighted the possibilities of online learning that will outlast the period of constraints. Although more sophisticated learning technologies now exist, recorded instructional videos remain one of the most popular and consistently used mediums for both formal and informal learning because of their ease of use, convenience, flexibility, and effectiveness (Islam et al., 2020). However, not all instructional videos are created equally, so it is important to know how to design educational videos that promote learning by knowing which features contribute positively to knowledge transfer and which do not (Fiorella and Mayer, 2018; Mayer et al., 2020).

Drawing on theories of learning with multimedia such as Cognitive Load Theory (Sweller et al., 2011), Cognitive Multimedia Learning Theory (Mayer, 2014), and the Cognitive-Affective Theory of Learning with Media (Moreno, 2006), we will present evidence-based guidelines for making effective educational videos. Using the topic of non-destructive spectral sensor applications for in situ analysis as an example, we will demonstrate some ways to improve instructional videos with the goal of accelerating the transfer of knowledge from academia and facilitating the implementation of NDSS in the food industry.

**Keywords:** instructional video, multimedia learning, instructional design, video demonstrations, knowledge transfer

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