Designing Technology to Support Online Faculty Development Through Teaching Observation, Peer Feedback, and Collaborative Reflection: A Brief Literature Review

Fulvio Biddau, Alessio Surian and **Anna Serbati**
University of Padua, fulvio.biddau@unipd.it
University of Padua, alessio.surian@unipd.it
University of Padua, anna.serbati@unipd.it

ABSTRACT: *This paper presents a brief literature review on technologies and web-based tools for faculty development. It investigates what resources are available to higher education (HE) teachers to support online professional development (OPD) activities based on feedback, collegial discussion, collaborative reflection or teaching observation. From recent studies we note that collective reflection is effective when technologies are acted and used as a medium for collaborative professional learning, appropriately choosing and aligning technology with education purposes and teachers' developmental needs, acknowledging the interrelations among technology, content and pedagogy. The paper provides a better understanding of the limits and potential of different technologies and how programmes of online faculty development can be designed to promote dialogical collaborative thinking.*

KEYWORDS: *Online professional development, Feedback, Video-based feedback, Teaching observation, Intercultural reflection.*

Introduction

Feedback and reflection are frequently considered an essential dimension of learning from experience, and a wealth of literature on teaching, teacher education, and faculty development focuses on them. The origins of reflection and reflective practitioner can be found in the works of Dewey (1910) and Schön (1983), with the latter distinguishing between reflection-on-action undertaken retrospectively, and reflection-in-action, which implies a reflective conversation with the situation. The concept of reflection has been further elaborated by scholars such as Mezirow (1991) and Brookfield (1995) among others. The first, distinguished between content, process, and premise reflection, representing different types and levels of depth in reflective practice. These are understood respectively as using beliefs and knowledge to make interpretations on action, reviewing the effectiveness of chosen strategies, and questioning the

validity of core beliefs, coinciding with instrumental, communicative, and emancipatory forms of learning (Kreber, Cranton, 2000). While reflection may be primarily an individual task, Brookfield pointed out that even if «critical reflection often begins alone, it is, ultimately, a collective endeavor» (1995, 35-36), namely a dialogical inquiry effort informed by four complementary lenses (of our students, peers/colleagues, the literature and our autobiography).

In this regard, some authors (e.g., Pickering, 2006) emphasized the benefits of dialogue for reflection, highlighting the perceived usefulness of collaborative reflection for novice academics and how higher education (HE) teachers can use reflective dialogue and feedback to develop their practice.

However, the literature on feedback in HE has drawn attention to the importance of challenging prevailing notions of feedback. Learning from feedback involves 'complex appraisal' and depends on the development of evaluative expertise (Sadler, 2010). As Shortland (2010) stressed, feedback can be inherently dangerous. Critical feedback may be damaging to the relationships, and sensed as evaluative, judgmental, competitive, and painful, hindering teachers' motivation and opportunities of exchange and support from colleagues. Nevertheless, it can be useless for the teachers' development if the critical/problematic is avoided. To be beneficial and provide learning and development opportunities, feedback needs to be critical but at the same time constructive, non-judgmental and supportive (Hogston, 1995). Good formative feedback should concern positive aspects of teaching and those that can be enhanced, motivating the identification of alternative ways of interpreting and doing things while being simultaneously specific, context-related and realistic, appreciating working constraints and offering options fitting with the context (Fletcher, 2018).

In the HE context, recent research has stressed the value of peer review and observation for community building (Harper, Nicolson, 2013) and to enable the examination of teaching from multiple perspectives (Huxham *et al.,* 2017).

In this regard, OPD technologies and opportunities have the potential to support collaborative, dialogic, and evidence-based approaches of mutual professional learning that would complement individual reflection on practice (Mann, Walsh, 2017).

1. Online faculty development: what technologies for supporting feedback and reflective practice with peers?

Digital technologies constitute a unique opportunity for professional development (PD) activities that are not just faculty-based. They provide teaching staff with the possibility of sharing and building knowledge with peers located at distance (Ravenscroft *et al.,* 2012). In this context, teachers may be conceived as «Self-directed, informal, and collaborative

learners – as OPD can be adapted to the needs and expectations of the teacher, conducing to full autonomy and self-realisation of learning» (Macià, Garcià, 2016).

Action-researchers that engage in a self-reflective spiral of investigation, reflection and constructive dialogue, looking for an external source of information to innovate classroom experience and produce new insights facilitating their professional development (Prestridge, Tondeur, 2015).

Nevertheless, limits and factors influencing the experience of technology-mediated collaborative reflection should be carefully considered. First, the social/psychological factors that affect collegiality and meaningful participation in online spaces, such as perceived trust and sense of community, or the perception of being in a safe and supportive virtual environment.

Second, the barriers to online participation that concern technology adoption and use (perceived ease of use and usefulness, digital habits). In this regard, technology acceptance is fundamental for boosting social interactions and increasing the satisfaction and sense of community (Tsai, 2012).

Finally, the role of educational experts in guiding the analytical process, sustaining knowledge sharing, nurturing debates, and encouraging and connecting teachers in the virtual environment. Research demonstrates that more complex, dialogical, and critical levels require guidance and support by mentors or instructors (Prestridge, Tondeur, 2015).

2. The literature review: rationale, procedure and materials

This paper has been developed in the context of the Erasmus+ funded project IntRef (Intercultural Reflection on Teaching, 2018-2021)[1], which aims at stimulating reflective dialogue and collaborative problem-solving between academics across different countries, institutions, departments and disciplines, facilitated by technology. Academics are linked across institutional and national boundaries through technology such as video recordings and videoconferencing to facilitate communication and exchange about learning, teaching and assessment.

In this context, we were interested in improving our understanding about the use of digital technologies to support faculty development activities based on observation, feedback and collaborative reflection.

For this reason, we revised the most recent scientific literature focusing on technologies and web-based tools that allow for collaborative reflection and feedback[2]. The rationale and purpose of the paper is

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[1] https://sites.durham.ac.uk/intref/

[2] Therefore, we did not consider self-reflective tools such as reflective journals or e-portfolios.

twofold: on one hand, the paper aims at mapping and exploring what kinds of resources are available to HE teachers to support transnational professional development opportunities based on feedback and collaborative reflection; on the other hand, it tries to understand how faculty development programmes of feedback-based reflective practice be designed to promote dialogical collaborative thinking in the virtual sphere.

The literature review was conducted by applying the following three-step procedure (i.e., search, qualitative synthesis, discussion), inspired by the Search, AppraisaL, Synthesis and Analysis (SALSA) analytic framework. The first step regarded the search procedure, which was carried out using the following search query adopted within title, abstract and keywords:

> "reflection on teaching" OR ("Reflective Practice" AND teaching) OR (feedback AND reflection AND teaching) AND ("higher education" OR college OR university) AND (online OR web OR technolog* OR video*)

The search was performed on the 25th of June 2020 with the Scopus database and was limited to peer-reviewed journal articles (research and review articles) published in the English language in the last decade (2010-2020). The first search produced 189 results.

After checking for duplicates, we assessed the eligibility of articles as the second step. The articles were assessed according to their relevance regarding the technological dimension and collaborative potential. We considered only articles that discuss in-depth the technological component supporting collaboration in professional development or teacher education.

During this process, we identified further literature to include in the final dataset. Articles were categorized into 'highly relevant articles' (i.e. articles where the technological dimension is at the core of the paper and strongly problematized), 'medium relevance articles' (i.e. the research article adopts or focuses on technology and gives information about its use), and 'low relevance articles' (i.e. the article only uses technology without sufficiently problematize its adoption).

From high relevance and medium relevance articles, we selected a sample of 46 articles representative of different digital technologies. These articles were included in the third step of the procedure, the qualitative synthesis and discussion, aimed at identifying and commenting on the main potential and limits of these technologies for faculty development.

3. Results

The review shows that the majority of studies focuses on teacher education/initial training, partially neglecting collaborative reflection for

continuous professional development (Hamel, Viau-Guay, 2019). Moreover, very few studies refer to the HE sector, and there is an almost complete lack of research in an international development context (Baecher *et al.,* 2018; Major, Watson, 2018), neglecting the increasing internationalization of HE teaching and related mobility of teachers.

Our review found that the most used digital technologies for online professional development of teachers fall in the following areas: online communities such as blogs or discussion forums, video-viewing and vide-based feedback (synchronous and asynchronous), and video-annotation tools integrated with virtual environments. Our findings are discussed focusing on these technologies.

3.1. Technologies for online asynchronous discussion: Blogging, discussion Forums and vlogs

Blogs and discussion forums are characterized by asynchronous nature, knowledge sharing and immediacy of responses, which make them suitable spaces for OPD characterized by sharing resources and reflections on teaching. Blogs have been increasingly used in HE. Nevertheless, two literature reviews highlight how they have primarily focused on student learning and experience rather than teacher reflection and feedback to enhance teaching (Kirkwood, Price, 2014; Sim, Hew, 2010).

Current literature argues that teachers use blogs mainly to share knowledge and materials (Booth, 2012). Despite this, they can be recognized as reflective devices that enable externalisation of reasoning, justifications of beliefs and considerations across time, while fostering collaboration and social interactions among fellow teachers (Deng, Yuen, 2011). However, blog posts are often descriptive – like diary entries – and involve reactions and emotional responses to classroom or curricula situations, with reflection often not taking place (Killeavy, Moloney, 2010; Smidt et al. 2018).

For this reason, blogging can be acknowledged as not the most effective tool for sharing personal reflections or reflecting collaboratively, with HE teachers. According to Powell (2017), the success of reflection through blogs greatly depends on the presence of clear learning goals, detailed instructions and safe virtual environments. Indeed, research demonstrates that structured prompts seem necessary for online-focused, guided and supported conversations fostering professional development (Booth, 2012).

On the other hand, within discussion forums, in-depth critical reflection seems promoted through the nature and wording of forum topics. When centred on pedagogical practices, discussion forums can question and scaffold teachers' understanding of the underlying assumptions and underpinning premises about the reason why particular pedagogical approaches are appropriate and effective, or not, and how to replicate and adapt them to the educational context (Dymoke, Harrison, 2008; Jones, 2014).

Thus, forums may overcome isolation and provide critical social support by developing a community of reflective practice that can enable professional learning through reading and inquiring into peer reflections and feedback (Boulton, Hramiak, 2012).

In these spaces, knowledge construction can happen with careful planning and facilitation, with scholars suggesting using synchronous discussion for analysing and debating controversial topics – such as new theories, ideas, or counterposing pedagogical alternatives – to improve the professional learning outcomes. In this regard, facilitators must guarantee the social, cognitive and teachers' presence by making the digital environment a supportive space, providing social support and encouragement, allowing interactions among members and promoting the analysis and discussion through instructions and suggestions (Chen *et al.,* 2009).

One further technology considered in the literature falls between blogging and video-viewing: the vlog. Vlogs or video blogs are recorded videos of the teacher speaking while thinking back across their practice, on understanding or misunderstanding of their actions during practice (Parkers, Kajder, 2010, 219).

In the same extent of blogs, vlogs are believed as excellent platforms for sharing ideas, thoughts, observations and knowledge within a learning community and could be adopted respectively as community-building tools, collaborative tools, and reflective tools (Taylor, 2013). The recent study by Ong, Swanto, and Alsaqqaf (2020) highlights how using vlogs teachers benefitted from reflecting deeply on their practice, but more importantly, by watching their peers they learnt new ideas and techniques they can borrow in their practice.

3.2. Video-viewing and video-based reflection and feedback

In the last 15 years, videos have been increasingly used both for teacher education and professional development, coinciding with an increasing research interest.

Indeed, the majority of articles we examined focuses on video technology, with recent reviews highlighting their possibilities and limits for teacher education and professional development. Compared to classic observation or reflective writing, videos give access to classroom events without sacrificing authenticity and complexity (Rosaen *et al.,* 2008), revealing missed events and making students thinking more visible (Barnhart, van Es, 2015), enhancing teachers' noticing when a particular lens/focus is provided (Gaudin, Chaliès, 2015). Research has demonstrated that using videos can be particularly useful for testing the effectiveness of teaching methods and identifying alternatives, enhancing classroom interaction and questioning, increasing the role of students and their speaking in class, challenging assumptions about students and their learning, and inquiring into their thinking processes to support them (e.g. Brown, Kennedy, 2011; Cho, Huang, 2014; McCullagh, 2012; Harlin, 2014). In this regard, videos can be used with two main

objectives: the developmental and the normative (see Gaudin, Chaliès, 2015). The first one aims to develop the teacher knowledge about how to interpret and reflect on classroom events of personal practice while the second aims to develop teacher knowledge on what to do in class by exposing teachers to exemplar or not exemplar videos of other teachers.

Seeing personal and peer videos can provide teachers with a double mirror – by being faced with an inner and outer perspective. By watching personal videos, teachers can recognize and learn what strategies worked or failed with students and what constitute a good performance and the rules of good functioning (Garcia *et al.,* 2017). On the other hand, viewing a peer video can help to clarify and question personal assumptions on teaching and learning, and develop new related understandings. It has the advantage of increasing knowledge of teaching by exposing teachers to different strategies through developing knowledge-based reasoning skills to analyse personal teaching (Prilop *et al.,* 2020; Kleinknecht, Schneider, 2013). In this way, teachers can improve their professional vision and engage in different sense-making strategies, which may counterbalance self-criticism (Zhang *et al.,* 2011) and contribute to the active self-development of the observer, leading to greater reflection and change in practice (Tenenberg, 2016). On the other side, videos can promote a shift from descriptive analysis to more focused and interpretative ones, and from the teacher to the students and their learning (Tripp, Rich, 2012a). Moreover, scholars found video-based feedback more specific, better grounded on and supported by evidence, and therefore more accepted by the observed teachers who can compare interpretations with evidence and identify strengths and limits of their practice and approach. To fully exploit the potential of video recordings, the intrinsic limits of the artefact and how to organise the analysis and collaboration should be considered. First, it appears crucial to realise appropriate videos, with choice and recording guided by classroom situation and teacher learning goals (Santagata, Guarino, 2011). Empirical evidence suggests that when teachers' agency and ownership of their learning is promoted, they show deeper reflective practice, are more autonomous, interact more freely, and benefit from formative evaluation (Rosaen *et al.,* 2010; Tripp, Rich, 2012b).

However, the use of videos can bring a high cognitive and emotional load, presenting multiple pieces of information that may overwhelm the teacher (Derry *et al.,* 2014). Therefore video-viewing and analysis should be scaffolded, guided and supported, anticipating elements that may be identified and possible interpretations, avoiding evaluation and providing appropriate frames to structure the inquiry process. Without adequate training and focus, teachers experience multiple difficulties in identifying relevant events in classroom videos, and without a particular filter they tend to focus on elements of little significance, producing a descriptive and superficial reflection (Gaudin, Chaliès, 2015).

Different studies demonstrated the necessity of prompting participants (e.g., Danielowich, McCarthy, 2013), or providing scaffolding for

supporting teachers' reflective practice (Blomberg *et al.,* 2013), though warning about using predetermined checklists constraining the gaze and perception of the situation by the observer (Shortland, 2010).

Altogether, this literature supports the idea that higher levels of reflection cannot be reached just by watching videos, but that a structured learning process has the potential to support reflection. Despite this large body of research, very little is known about how video-based protocols pragmatically support reflection (Danielowich, 2014), especially in the higher education sector. The use of video is often described in general terms and few studies document the trainer/facilitator contribution in the protocols (Arya *et al.,* 2013a), or describe in detail the instructions and how the video is integrated into instruction (Baecher *et al.,* 2018).

3.3. Video-annotation collaborative tools and digital-based feedback and reflection environments

To avoid cognitive load, some scholars suggest focusing on short clips, which focuses the attention on a particular issue seem to be more useful than longer videos raising a host of issues (Bates *et al.,* 2016; Sherin *et al.,* 2009).

In this regard, video-annotation collaborative tools integrated into digital environments can be more suitable. These are characterised by a simple graphic-based interface integrating a viewing area and space where users can add and edit comments on specific segments/clips.

Our review highlights that research on video-annotation is recent, limited, and mostly with pre-service teachers (e.g. Colasante, 2010) or focusing on personal reflection. For example, the study by McFadden et al. (2014) used video annotation technologies to provide teachers with the ability to add time-marked text annotations to their classroom video and reflect on their practice. They found that teachers' annotations revealed a predominance of the lower-level reflective stances and that the technology usability and accessibility must be complemented by structured assignment and facilitation within the tool.

However, when used in a collaborative way, research demonstrates that video-annotation can augment and extend the reflective experience by facilitating and collaboratively structuring the analysis process, receiving feedback from multiple participants/perspectives. The study by Picci, Calvani, and Bonaiuti (2012) argues that some aspects are fundamental to increase the usefulness, appeal and ease of use of collaborative video-annotation technologies: the sharing and negotiation of observation criteria among participants and specific training on feedback.

Other scholars put it that the permanency of comments provides teachers with a written record for later reflection, and enough time to consider the feedback thoroughly and compare their viewpoint with other peers (Straková, Cimermanová, 2018; Kassner, Cassada, 2017). The advantage is to expose teachers to diverse peer coaching, questioning,

observations that may elevate the quality of analysis and feedback, allowing the integration of positive, critical and counterbalanced perspectives into reflection on self and other teaching events (Kleinknecht, Gröschner, 2016).

Despite this, synchronous discussion can be more effective in supporting higher-order thinking and ensuring cognitive presence in the online environment.

Conclusions

The affordance of technologies to promote the social construction of knowledge is effective when technologies are acted and used as a medium or stimulus for collaborative learning, appropriately choosing and using them aligned with education purposes, recognizing the connection between technology, content and pedagogy (see Jones, 2014).

The literature examined suggests exploring and using technologies giving priority to those who result as user-friendly, familiar or that can be easily integrated into everyday life and habits to increase the perceived ease of use and usefulness for boosting social interactions and increasing satisfaction.

The review shows that the success of technology-mediated collaborative reflection depends on how instructors/facilitators assist with the process, guaranteeing social, cognitive and teacher presence, how collaboration is socially organized, and what instruments/lenses are provided for inquiry, reflection and feedback about teaching and learning. While teachers should be the owners of their learning path and have adequate agency in the process, they need to be trained and guided in reflecting writing, video-viewing (noticing and interpreting events) as well as on feedback and strategies for scaffolding critical reflection of colleagues (e.g. framing, oppositional voice, counterposing alternatives, see e.g. Clara *et al.,* 2019) to foster effective use of technologies for professional learning purposes.

Regarding future areas of research, we found limited evidence on the use of video-conferencing technology to support synchronous discussion (see e.g., Lenkaitis, 2020), and collaborative inquiry (such as in video-viewing); technologies that may enable the development of reflective experiences and communities across countries and institutions.

Moreover, while the technologies discussed in this review may allow the integration of students' perspective and voice into personal and collaborative reflection on teaching (e.g., Huxham *et al.,* 2017), therefore taking full advantage of Brookfield stance on the dialogical inquiry into teaching (1995), this represents a field of research almost unexplored that deserves further attention.

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