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articoli

Promote Informal Formative Assessment practices in Higher Education: the potential of video analysis as a training tool

Promuovere pratiche di Informal Formative Assessment all'università: le potenzialità della videoanalisi come strumento di formazione

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Abstract

This article presents the theoretical and methodological framework, objectives and phases of a project of the University of Bologna aimed at promoting Informal Formative Assessment (IFA) practices in university teaching. The paper has two elements – the first, the use of video analysis in teacher training to develop the skills required for implementing IFA are examined through the University of South Australia example provided. The second – the IFA construct outlined within the project and the related indicator system developed to support university teachers in the systematic observation of videos and in reflection on their teaching practices (validated by an international panel of experts) are presented.

Keywords: teaching in higher education; university teachers' professional development; video analysis; Informal Formative Assessment practices.

Sintesi

Il contributo presenta il quadro teorico-metodologico, gli obiettivi e le fasi di un progetto dell'Università di Bologna finalizzato a promuovere pratiche di Informal Formative Assessment (IFA) nella didattica universitaria. L'attenzione è focalizzata in particolare su due aspetti: il primo è relativo alle potenzialità della videoanalisi nella formazione dei docenti – analizzate anche attraverso l'esempio fornito dalla University of South Australia – al fine di promuovere le competenze connesse all'implementazione di pratiche di IFA; il secondo riguarda il costrutto di IFA delineato nell'ambito del progetto e il relativo sistema di indicatori – in corso di validazione da parte di un panel internazionale di esperti – messo a punto per accompagnare i docenti universitari nell'osservazione sistematica dei video e nella riflessione sulle proprie pratiche didattiche.

Parole chiave: didattica universitaria; sviluppo professionale dei docenti universitari; videoanalisi; pratiche di Informal Formative Assessment.

[1] The overall structure of the contribution is the result of a reflection and discussion shared among all the Authors. Paragraphs 1, 3.1 and 4 were written by Vannini; paragraphs 2, 4.1 and 4.2 were written by Rosa; paragraph 3.2 and 5 were written by O'Keeffe and White.

1. Introduction: video analysis as a strategy to promote formative assessment practices in higher education

In the article, the international research group presents the first results of a research path that aims to define a framework of valid and reliable indicators to systematically observe (via video analysis) the practices of Informal Formative Assessment (IFA) in the classrooms university.

The main hypotheses of the research are:

- introduce IFA practices to ensure greater effectiveness of university teaching;
- use the video analysis techniques to support and improve the systematic observation of IFA practices in higher education contexts.

As discussed below many studies highlight the effectiveness of video analysis to promote the development of teaching skills of teachers and their professional vision. However, there are no specific studies that monitor the use of noticing procedures (via video analysis) on IFA practices in university teaching-learning contexts.

This study started from the premise that IFA is a set of sustainable and effective formative assessment practices for higher education teaching, especially for teaching large cohorts of university students. IFA practices can constitute an important strategy to promote the quality of teaching and to improve the student achievement (through the exploitation of the potential of the formative assessment, such as the active involvement of the students, the constant use of formative feedback, etc.).

Therefore, the first phase of the research was dedicated to the development of the IFA construct in higher education and to the definition of a framework of indicators that could be valid for a guided noticing of brief video sequences of university teachers in the classroom. This framework would then be used during training as a reference to promote these practices in concrete contexts.

Starting from these assumptions, the article initially explores the concept of IFA (within the broader framework of the Formative Assessment) and its effectiveness for learning; later, it introduces the theme of video analysis as a strategy to support teacher training and enhance their noticing, reflection and re-planning skills of their own practice. It then provides an example of this in action with a cohort of pre-service teachers before presenting the IFA construct (and the related validation methods of the construct at an international level). This construct, together with the specific set of indicators, is considered by the research group as the original product of the research and the fundamental *object* of the noticing procedures that will be implemented in the subsequent work phases.

2. Formative assessment within the strategic objectives of higher education systems

Over the last number of decades, the international debate on assessment in higher education has highlighted the central role of formative assessment to improve the quality of teaching and learning. The need for a change in the conception and practice of assessment towards a formative approach is linked to a paradigm shift from instruction to learning as a strategic goal for higher education systems (Barr & Tagg, 1995). Instead of characterising it as a content acquisition process based on teacher transmission, learning is now commonly conceptualised as a process whereby students actively construct their own knowledge and

skills by interacting with subject content, elaborating and discussing it with others, and making connections with what is already known. Terms such as *student-centred* teaching approach, which have entered the lexicon of higher education institutions (ESG, 2015), reflect this new way of thinking based on the core assumption of student active engagement in learning consistent with the literature on social-constructivist learning theories (Nicol & Macfarlane-Dick, 2006). The recent widespread interest in more complex conceptions of student learning – which has led to a growing attention on how these could be promoted by academic staff using a student-focused assessment model in a student-oriented learning environment (Fook & Sidhu, 2013) – represents the main theoretical underpinning of formative approaches to assessment and feedback (Evans, 2013; Torrance, 2012).

Since the comprehensive review by Black and Wiliam (1998a), a substantial amount of evidence supporting the effectiveness of formative assessment in promoting student learning across a wide range of educational settings (disciplinary areas, types of outcomes, levels) has been published. On the basis of this research literature, its implementation seems to have numerous benefits that could improve the quality of teaching and learning, both in higher education and education in general. Various scholars have highlighted the strengths of formative assessment for students: (i) it fosters greater levels of self-esteem and motivation (Fook & Sidhu, 2013); (ii) it prepares them to become effective lifelong learners capable of independent, reflective and critical thinking (Boud, 2000); (iii) it influences learning approaches and strategies by encouraging students to take an active role in their own learning and empowering them as self-regulated learners (Nicol & Macfarlane-Dick, 2004; 2006); and (iv) it can foster a more inclusive approach in higher education by facilitating the learning of a wider and more diverse student population (López-Pastor & Sicilia-Camacho, 2017). Evidence from practice showed positive effects of formative assessment also on teachers: it gives them opportunities for exploring student understanding and progress and tailoring their teaching accordingly (Yorke, 2003), provides information about difficulties experienced by students and where to focus their teaching effort (Nicol & Macfarlane-Dick, 2004), and allows for a greater engagement of teachers as reflective practitioners and the improvement of their teaching practice (López-Pastor & Sicilia-Camacho, 2017).

Despite these benefits for students and teachers and the shift in conceptions of teaching and learning in higher education, a parallel shift in relation to assessment has been slower to emerge (Nicol & Macfarlane-Dick, 2006). Boud (2000) cautioned that dominant approaches to assessment in higher education have remained focused on product-oriented certification purposes: whilst developing formative assessment is generally regarded as a *good thing*, the empirical evidence suggests it is not widely used and difficult to implement effectively (López-Pastor & Sicilia-Camacho, 2017; Torrance, 2012). Among the main challenges threatening the use of formative assessment in higher education, Yorke (2003) points out how the teachers typically do not have substantial grounding in the theory and practice of formative assessment and that they usually hold assumptions in which the structure and progression of the subject discipline, rather than student development, is dominant.

Internationally, greater attention has been given in recent years to the professional development of university teachers through systematic approaches and specific training programs (European Commission, 2017; Inamorato, Gaušas, Mackevičiūtė, Jotautytė, & Martinaitis, 2019; OECD, 2012). Based on the literature examined, the authors propose that formative assessment should be a key element of such programs. In order to promote a greater balance between summative assessment focusing on examinations and grades and

more process-oriented assessment that can promote student learning, university teachers must be supported in the professional challenge of examining and reviewing their assessment practices and developing required knowledge and skills for embedding good formative assessment processes in their courses, as well as appropriate attitudes towards the role they can play in teaching and learning.

The importance of formative and student-centred assessment in higher education has been underlined in the Italian context (Felisatti, 2019; Montalbetti, 2018), but – with some exceptions (Coggi, 2019; Coggi & Ricchiardi, 2018) – it seems that there are still few studies and experiences focused on the training of university teachers in this specific area of competence. Based on the outlined framework, the research project presented in this article was conceived precisely with the aim of promoting formative assessment practices in higher education through innovative video-based teachers' professional development. In particular, the quality dimensions of university teaching on which the attention has been focused refer to the construct of IFA, which emerged in the scientific debate on the topic starting from the developments in the definitions and conceptions of formative assessment proposed over time.

Although its definitions revolve around the basic idea that the purpose of assessment is to support and improve student learning, formative assessment is a complex concept characterized by a diverse range of approaches related to different theoretical perspectives and empirical instantiations. In the behaviourist tradition of mastery learning proposed by Benjamin Bloom in the 1960s, formative assessment was conceived as a structured and planned activity, usually in the form of a paper-pencil test, used by teacher at the end of each instructional unit to identify immediately students' errors and difficulties and then to provide appropriate correctives (Wiliam, 2011). Over the years, much work has been directed at elaborating Bloom's initial conception, especially in French (Allal & Mottier Lopez, 2005) and in the United Kingdom through the Assessment Reform Group and associated work on *assessment for learning* by Black and Wiliam and colleagues (Black, Harrison, Lee, Marshall, & Wiliam, 2003). These renewed theoretical perspectives have contributed to an enlargement of the concept in line with more social-constructivist approaches, in which formative assessment, rather than considered as a specific event occurring after a phase of teaching, appears to be integrated within each instructional activity as a continuous and interactive process of feedback exchanges between teacher and student, student and student, student and task. Black (2009) proposes the notion of a continuum of formative assessment approaches where the *frequent testing* approach is at one end and the *interactive dialogue* approach at the other. The difference between the two perspectives are similar to the distinction suggested by Bennett (2011) between formative assessment as an *instrument* – i.e. tests used formatively in the mastery learning tradition – or as a *process*. On one side, formative assessment will typically produce scores with diagnostic value and will generally require cycle times suited more to instructional units than to daily lessons; on the other side, the process produces qualitative insight into student understanding useful to adapt the teaching to meet student needs over short cycles, within or between lessons.

In the wake of the proposed differences in conceptualisation of formative assessment, some authors have articulated the distinction between *formal* and *informal* formative assessment (Bell & Cowie, 2001; Ruiz-Primo & Furtak, 2007; Sezen-Barrie & Kelly, 2017; Shavelson et al., 2008). The latter is blended in instructional activities by including several forms of *interactive regulation* (Allal & Mottier Lopez, 2005) with the aim of collecting evidence of learning each time students are participating in classroom discourse. As stated by Ruiz-

Primo (2011), this approach "uses everyday learning activities as potential assessments that provide evidence of students' learning in different modes. Information can involve one or more sources of evidence (e.g., students' questions, students' oral responses, students' written responses in a handout, or student-to-student conversations)" (p. 15). Acquired information must be used to shape the course of events: acting in response to this evidence is usually quick, spontaneous, and can take on different forms (e.g., responding with a question, asking other students to express their opinions, or offer an explanation). This formative and exploratory dialogue requires teachers to pay attention to detail of instruction (e.g. the detail of the types of question asked to the students) and to decide *on the fly* how to interpret students' suggestions to help them think more deeply (Black, 2009). It involves, for many teachers, a significant change in their practice and in perceptions of their own role in relation to students.

3. Video analysis to enhance the teaching professionalism in higher education

This section presents theoretical and empirical perspectives on the potential of video analysis to promote teachers' professionalism. The hypothesis that emerges in conclusion (presented in section 4) is that these potentials can also be exploited with university teachers, where they want to promote their innovative teaching practices, of greater involvement of students, even in large classrooms.

3.1. The potential of video analysis for the training of university teachers

The use of video analysis for development of teaching professionalism among university teachers is aimed at stimulating a habit of self-evaluation, through the systematic observation of video recorded instructional practices. In accordance with the international debate on *teacher change* (Guskey, 1986; Richardson & Placier, 2002), video observation of teaching practices (observation of oneself or others) strongly encourages the analytical and reflective abilities (Girardet, 2018) of teachers in training and therefore it could also be a key tool to promote change in practice among university teachers.

Through video analysis it is possible to give meaning to action. The detailed and systematic observation of specific practices of the teacher in classroom promotes the development of the so-called *professional vision* (Goodwin, 1994), that is, the ability to notice and interpret significant features of classroom interactions. Once this has been developed, then the video analysis by the teacher can be a very powerful tool to stimulate the teacher change, as regards both beliefs and classroom practices. In order to promote the development of a professional vision, video analysis should contemplate the implementation of two processes: *noticing* and *reasoning* (Gentile & Tacconi, 2016; van Es & Sherin, 2002; van Es, Tunney, Goldsmith, & Seago, 2014).

The noticing process requires that the teacher exercises their attention to detail, analyses the phenomenon both in the light of their own cultural system of beliefs and knowledge and also in the light of specific external theoretical framework. Subsequently, the reasoning process – individual, in a group, with the scaffolding of the trainer – promotes interpretation skills and critical thinking, allows to compare the practices observed with one's own and with further development possibilities. Noticing constitutes an interesting *first training opportunity* to enhance the teaching skills of university teachers: when they are able to *notice* specific verbal or non-verbal behaviours (for example to highlight a key point from

the actions carried out by the subject of the video) they acquire, at the same time, the possibility of imagining alternative action choices (Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008) and therefore to trigger a reflection on one's own and others' practices.

However, this possibility is guaranteed only if the researchers-trainers have delimited a precise focus of attention on which to orient the trained teachers, by making theoretical choices about the dimensions and aspects on which to focus the gaze and exercise skills of professional vision (Sherin & van Es, 2009). Providing specific *guides* or *lenses* for video observation and analysis is essential to prevent teachers from feeling disoriented when faced with a complex and often new task, focusing on general impressions and superficial aspects or just seeing what is most important to them (Blomberg, Renkl, Sherin, Borko, & Seidel, 2013; Roth et al., 2017; Santagata, 2012). In this regard, the use of observation grids or coding schemes built in line with the reference constructs can play a scaffolding function, helping teachers to direct their attention to particular features of classroom interactions and specific teaching quality indicators.

3.2. UniSA's experience on video analysis for teacher training

As discussed, the use of video analysis as a reflective tool for improving teaching is widely recognised as providing an opportunity for *self-confrontation* (Balzaretti, Ciani, Cutting, O'Keeffe, & White, 2019). For this self-confrontation to have the desired effect, that is to impact positively on practice, there are a number of design principles to be considered. In this section we illustrate some key *learnings* from a trail with pre-service teachers which highlighted the importance of scaffolding practices for IFA including reflection.

Authors O'Keeffe and White have been working on the use of 360-degree video analysis as part of a key reflective task (as formative assessment) for the development of pre-service teachers of mathematics. In this research (O'Keeffe, Balzaretti, White, Cutting, & Ciani, 2019), the University of South Australia (UniSA) team worked with cohorts of pre-service teachers undertaking a curriculum course in Mathematics Education as part of their Master of Teaching (Secondary). The pre-service teachers were in the first study period of the first year of their program and in general had no formal teaching experience. As part of the assessment (formative and summative) in this course the pre-service teachers, in assigned groups, prepare and give a teaching presentation (recorded using a 360degree camera) for their peers on an aspect of mathematics. Following their presentation, the group engaged in dialogic feedback with their tutor and their peers (formative) before submitting a group written reflection (summative), which was assessed. The video files were shared with the PSTs, after they completed their group reflection, and they were then asked to self-reflect on their teaching presentations (formative). These self-reflections are guided using specific frameworks/prompts. Initially, this reflection task was left open. However, not surprisingly the pre-service teachers found this rather overwhelming and tended to focus their *noticing* on superficial things such as voice projection rather than the quality of their interactions. This highlighted the need for greater scaffolding to support PSTs in developing the skills they needed to meaningfully engage with the IFA.

In line with work such as that by Blomberg et al. (2013), Roth et al. (2017), Santagata (2012), we have, over time, found the need to target specific aspects/qualities to help the pre-service teachers to develop their abilities to undertake such reflections. Providing these guides or lenses has enabled pre-service teachers to build on their own reflections. Thus, helping the pre-service teachers focus their attention on particular features of classroom interactions and specific teaching quality indicators – the selection of which can be

determined by the level of reflection sought i.e. initial reflections, versus reflection on repeated practice.

Through this work three design principles were evident. These principles, outlined below, inform aspects of the UniBO project, presented in the next section of the article, by providing evidence-based insights and data around how in-experienced teachers respond to different levels of reflection. Additionally, the UniBO project has informed the UniSA work by providing structure to elements of the formative assessment components.

1. *Structured scaffolded reflection*: reflection is an integral part of teacher development and for enacting change in teaching as it helps educators to better understand what they know and do in regard to their teaching (Loughran, 2002). This reflection needs to be both structured and scaffolded. However, the bridge between descriptive reflection and analytical/critical reflection is often a difficult process and thus this process needs to be well structured and scaffolded – particularly in the early stages of video analysis for professional development. An example of this might be choosing to focus on a specific aspect of teaching, such as noticing and providing prompts to guide educators to review particular aspects of practice. Reflection, regardless of the depth of reflection achieved, it is less useful when one does not have the opportunity to enact new understandings or ideas as a result of reflecting. Hence, repetition is a key component of UniSA's video analysis work;
2. *Collaboration*: a strength of collaborative professional development is that it allows the incorporation of a range of views into discussion and reflections (Barfield, 2016; O'Leary & Wood, 2019). A core part of UniSA's work is the use of collaboration with paired/grouped video analysis. This provides two things, one an additional layer of feedback and two opportunities to see similar things taught in different ways. Not dissimilar to approaches taken in lesson studies (Widjaja, Vale, Groves, & Doig, 2017), the intention behind this type of collaboration is create a form of *dissonance* for educators. By teaching similar topics in different ways and then undertaking video analysis on both approaches, educators can reflect on how different students engage with different pedagogical approaches. This can be particularly useful for someone who might struggle to see or believe in alternative approaches to teaching;
3. *Multi-perspective with minimal invasion*: an important part of UniSA's work is the opportunity for educators to reflect on their teaching from different perspectives, e.g. their own as an educator and their students. One particular concern with single perspective video analysis is that focusing on the teacher alone promotes of view of teaching as teacher centred with a passive student body (Clarke, 2006). Our approach to multiple perspective video analysis, while maintaining minimal intrusion, has been to use 360-degree video technology. One of the main challenges of classroom/teaching video collection is that decisions in regard to where to point a fixed video recorder, how many cameras, etc. have to be made prior to teaching and recording. However, as discussed by Clarke (2006), every decision one makes reflects some form of pre-determined interference which impacts on what data is gathered. Using 360-degree video cameras allows for immersive 360-degree perspective, providing the flexibility to record, view and analyse interactions from multiple view-points; thus removing the initial layer of researcher restrictions on the video recording.

4. Foster the IFA practices of university teachers: the UniBO Project

Starting from the suggestions of the theoretical debate and from sharing the experience with UniSA, a research group[2] of the Department of Education "G. M. Bertin" (Alma Mater Studiorum - University of Bologna) is carrying out a research project for the training of university teachers through video analysis (UniBO Video Project). The project is part of a UniBO policy aimed at improving teaching practices of teachers through a Teacher Professional Development Research approach (https://centri.unibo.it/crespi/en/centre, Asquini, 2018) and an evaluation idea in the sense of *formative educational evaluation* (Betti, Davila, Martínez, & Vannini, 2015), where the evaluation is an opportunity to highlight the strengths and weaknesses of the teaching practices and to solicit a collective and critical reflection, useful to planning the professional improvement. Within this macro project, the fundamental strategic element is the focus on the teacher as an active player in the renewal of teaching and, at the same time, a favoured observer of the teaching-learning contexts that take place within the degree curriculum. Skills and conditions for quality teaching can in fact be promoted and developed only against the active involvement of university teachers, also in their collegial dimension within the degree courses (Balzaretti, Luppi, Guglielmi, & Vannini, 2018).

In this perspective, the aim of the UniBO Project is therefore to create *ad hoc* training situations in which small groups of university teachers have the opportunity to dialogue about teaching quality and to use video analysis to develop their teaching professionalism. Through the use of video analysis, university teachers can exercise their observation skills on video sequences showing concrete examples of teaching practices in higher education, and subsequently implement self-evaluation and critical reflection processes stimulated by the interaction with researchers/trainers and colleagues.

Starting from the theoretical debate, and from previous research experiences (Ferretti, Chrysanthou, & Vannini, 2018), the choice concerning the teaching quality dimensions on which to focus video analysis procedures fell on *a set of practices specifically aimed at engaging students during the teaching-learning process*. This teachers' practices are useful for guaranteeing a continuous assessment with diagnostic and regulatory function and fostering feedback exchanges between teachers and students.

In this regard, a construct of *Informal Formative Assessment for the Quality and Effectiveness of Teaching in Higher Education* has been defined, presented in the next section of the article, which allowed for:

- the identification of criteria for the selection of video excerpts (which sequences of actions are more consistent with the construct);
- the framework of quality indicators, useful for guiding noticing procedures.

In this perspective, the research group has planned a noticing phase of video excerpts on several steps:

- a first *noticing expert* (by researchers-trainers) aimed at checking the validity of the indicators identified and (through procedures of co-observation among more researchers) the overall reliability of the set of indicators;
- free noticing by university teachers in training, without the set of quality indicators;

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- a noticing construct-oriented by university teachers in training, with the set of indicators available, aimed at highlighting which *quality instructional practices* are in the video sequence and which are absent.

At the end of these steps, a first reasoning moment can be focused on the comparison between expert-noticing and university teachers' noticing, so as to highlight and reflect on possible omitted aspects.

The project's assumption is that accurate and systematic noticing procedures (also supported by appropriate technologies) enhance the analytical mindset of teachers and their *professional vision* (Sherin & van Es, 2009), activating concrete possibilities of change of beliefs and practices (Tripp & Rich, 2012). Especially where there is a subsequent reasoning moment, both individual and collective through the comparison between colleagues, on the re-planning of teaching practices.

The UniSA Oval platform (https://lo.unisa.edu.au/mod/book/view.php?id=947017) for video analysis constitutes the essential support tool both in the noticing phase and in the subsequent phase of reasoning and collective reflection, as it is specifically designed in relation to the needs of the project.

Even the *reasoning step* (the second phase of the training dedicated to reflection of the university teacher groups) must in fact be carefully supported by adequate tools and expert trainers. The conditions that facilitate the reflective (and productive) processes of teachers (van Es et al., 2014) – such as the orientation of the group towards specific tasks – support for a systematic *inquiry based learning* attitude, maintaining focus on video. The trainers must also be able to perform a mentoring function, offering specific support to the processes of reasoning and reflective thinking, following the noticing phases. In particular, the reflection – individual and collective – on the data highlighted with the noticing may follow some steps (Balzaretti, Leonard, Lim, Unsworth, & Vannini, 2018):

- describing with words (conceptualization) of what is identified through noticing (presence or absence of quality indicators);
- looking for cause-effect links of what has been observed (and of the missing indicators) and group discussion;
- identifying possible alternatives instructional practices compared to those observed and hypotheses of group re-planning.

The role of the researcher-trainer, similar to the principles of collaboration from the UniSA project, becomes essential to foster the reflective processes of university teachers. A key part of this process is formative feedback actions and progressive deepening of the analysis of the observational data highlighted during the noticing phase. Frequent reviewing of the reflections in line with quality indicators, soliciting comparisons between what has been observed and the practices of the individual university teachers, and supporting the paths of re-planning of observed practices are very important functions of the researchers-trainers.

4.1. Analyze IFA practices through videos

As noted by Torrance (2012), current interpretations and exemplifications of formative assessment in the international literature – largely merged into a common commitment to the development of assessment for learning – favour the informal approach and everyday classroom processes over more test-based forms of monitoring student progress (Klenowsky, 2009). Based on these theoretical premises and the analysis of developments

in conceptualisation of formative assessment (as discussed in the second paragraph of the article) with a focus on well-known contributions aimed at defining its key elements or strategies (Bennett, 2011; Black & Wiliam, 2009; Clark, 2010; Hattie & Timperley, 2007; Ruiz-Primo & Furtak, 2007; Sadler, 1989; Wiliam & Thompson, 2008), the research team at the UniBO have developed a construct of IFA for quality teaching in Higher Education intended as a framework for observation and reflection on video recorded teaching practices.

As pointed out by Black and Wiliam (1998b), the difficulties in translating the theoretical principles of formative assessment into practice cannot be underestimated in training efforts aimed at promoting teachers' competences in this area: "what teachers need is a variety of living examples of implementation, as practiced by teachers with whom they can identify […]. They need to see examples of what doing better means in practice" (p. 146). In this regard, the use of video for training purposes offers the opportunity of an engagement with a virtual field experience, with the analysis of teaching in real contexts, fostering a process of recursive interaction between theory and practice (Santagata, Zannoni, & Stigler, 2007; Seidel, Blomberg, & Renkl, 2013). In line with the recent emphasis on practice-based professional development, in which teachers have the opportunity to learn from authentic representations of their own and others practice, video can be thought of as a *secondhand* experience of teaching, allowing one to be immersed in a classroom situation without the pressures, responsibilities and concerns related to immediate action (O'Keeffe et al., 2019; Blomberg et al., 2013; Sherin & van Es, 2009).

The IFA construct adopted and shared within the UniBO Project identifies the quality dimensions of the teaching practices on which we have chosen to focus the attention of the university teachers during the video-based training. It refers to an assessment *for* learning defined as:

- integral part of teaching-learning processes and tool to regulate them embedded in the *normal* unfolding of instructional activities and, in particular, in the interaction between teacher and students and among peers;
- a practice connected to a vision of teaching-learning processes aligned with socio-constructivist learning theories and with a student-centred teaching approach;
- a collection of specific behaviours and mostly informal strategies that the teacher can use to promote a continuos exchange of feedback useful to improve teaching-learning processes;
- dimension of teaching that, although influenced by contextual elements and constrains and enacted differently based on them, allows to identify theoretical and practical principles that cut across the various possible teaching situations (in relation, for example, to subject matters, number of students, and characteristics of the classroom).

From the perspective of the teacher, the integration of IFA strategies and practices in the context of one's teaching activity means first to adopt a reflective and flexible mindset, interrogate oneself constantly about the effectiveness of one's practices by gathering information about student learning and using it to adapt subsequent actions and interactions. It also means to consider the student as an active subject in such processes by promoting his/her ability to reflect on learning processes and to regulate them autonomously by using scaffolds provided by the teacher and the peers.

In more specific terms, it is assumed that an effective use of formative assessment in university teaching implies on the part of the teacher the intention and ability to:

- adopt communication and relational approaches that create a positive and participatory learning climate, in which students feel not only valorised and respected, but also comfortable and free to express themselves and intervene with any doubts or difficulties;
- give students reference points so as to orient themselves in the instructional pathway and monitor/regulate autonomously their own learning processes by making explicit the objectives that have been achieved and by framing them within the structure of the unfolding learning activities;
- paying continuous attention to the assessment of the learning processes, by involving students and encouraging their contributions with the goal of gathering information on their level of understanding and on difficulties they may encounter;
- utilize such information to regulate one's teaching practices and to provide feedback to students, by helping them to make progress in their learning;
- promote self and peer assessment processes to support the taking of an active role in the learning process and the development of reflective and self-regulation competencies.

The key processes underlying the construct are summarized in the dimensions included in Figure 1, that identify a collection of strategies useful for *activating* students during teaching-learning activities and allowing the teacher and the students themselves a more effective regulation of the processes towards the achievement of the expected results. Taken together, they provide a framework or *lens* for observation and analysis that helps to structure noticing and reasoning processes around particular features of classroom interactions when university teachers work with video examples, in line with the conditions for effective use of videos in teacher training previously highlighted. The IFA indicator system presented in the next section was developed starting from the outlined construct to further support these processes by helping teachers to direct their attention to specific teaching quality indicators.

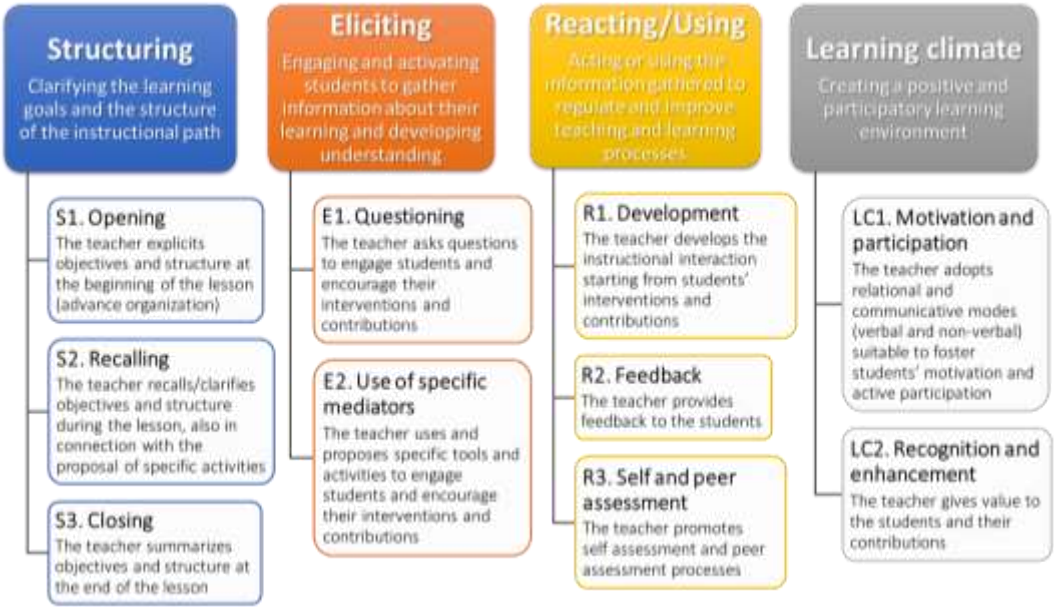

Figure 1. IFA in university teaching: dimensions and sub-dimensions of the construct.

4.2. A guide for video analysis: construction and validation of the IFA indicator system

Starting from the outlined construct and in line with the assumptions and objectives of the project, a tool was subsequently developed for the systematic observation and noticing of video recorded teaching practices in higher education. The IFA indicator system operationalises the construct by presenting a list of observable teacher actions and behaviours considered as quality indicators of teaching based on the theoretical reference framework. As shown in Figure 2, which illustrates some examples of the proposed indicators, they are therefore divided into four categories corresponding to the four recursive dimensions of instructional practices – closely related to each other – in which the construct of IFA was articulated, and are further grouped into the specific sub-dimensions or sub-categories included within each of them.

Dimension	Sub-dimension	Indicator examples
STRUCTURING	**S1**. Opening	**S1.1.** The teacher clarifies the objectives and contents of the lesson. **S1.3.** The teacher links the objectives and contents of the lesson to concepts/themes previously addressed in the course.
	S2. Recalling	**S2.1.** The teacher recalls the objectives initially clarified. **S2.5.** The teacher links the goals and contents of specific activities proposed to the students to the objectives of the lesson.
	S3. Closing	**S3.1.** The teacher goes back over the structure of the lesson and summarizes the main contents addressed. **S3.3.** The teacher anticipates the objectives and contents of the following lesson(s).
ELICITING	**E1**. Questioning	**E1.7.** The teacher asks students to define some basic concepts previously introduced **E1.10.** The teacher asks students to try to make examples in relation to the contents addressed. **E1.11.** The teacher asks students to interpret information and data. **E1.17.** The teacher encourages students to express their point of view in relation to the contents addressed.
	E2. Use of specific mediators	**E2.4.** The teacher asks students to carry out a task or activity (e.g. case analysis, problem solving, exercises, simulations) using the contents addressed during the lesson (or within the course). **E2.6.** The teacher asks students to build a graphical representation (e.g. a concept map) to summarize the main contents addressed during the lesson (or within the course).
REACTING/USING	**R1**. Development	**R1.1.** The teacher asks a new question starting from answers given by students to a previous question. **R1.3.** The teacher reformulates a student's contribution (e.g. summarizing it, clarifying it, elaborating it). **R1.4.** The teacher solicits students' questions and comments about a student's contribution.
	R2. Feedback	**R2.1.** The teacher provides students with evaluative feedback (focus on correctness). **R2.2.** The teacher provides students with informative/descriptive feedback (focus on strengths and weaknesses).
	R3. Self and peer assessment	**R3.1.** The teacher encourages self-assessment processes during the lesson (e.g. by asking students specific questions). **R3.3.** The teacher asks students to self-assess their work with reference to a specific activity carried out. **R3.6.** The teacher provides students with specific criteria (e.g. rubrics) to assess the work of other students in relation to a specific activity carried out.
LEARNING CLIMATE	**LC1**. Motivation and participation	**LC1.1.** The teacher uses a friendly tone to communicate with students. **LC1.3.** The teacher moves around the classroom. **LC1.9.** The teacher makes it clear to students who are free to intervene if they have doubts, comments or reflections. **LC1.12.** When the teacher asks a question, he/she gives the students time to answer.
	LC2. Recognition and enhancement	**LC2.3.** The teacher values and respects the contributions of students. **LC2.5.** The teacher encourages students to make suggestions and proposals about lesson contents and activities.

Figure 2. IFA in university teaching: examples of indicators for each dimensions and sub-dimensions of the construct.

In order to test the validity and reliability of the observation tool, a two-stage validation process has been planned:

- theoretical validation, carried out by a panel of Italian and international experts[3] required to express their evaluations on the construct and content validity of the indicator system;
- empirical validation carried out by the members of the UniBO research group in collaboration with UniSA and another university involved in the UniBO Project, the University of California Irvine (UCI).

The validation of the observation grid by a panel of experts in the field, selected on the basis of their scientific and professional skills, was considered fundamental to allow the research group to critically reflect on the validity of the instrument and to review consequently the indicator system. To this end, a semi-structured questionnaire was developed (Figure 3) to gather the opinions of the panel about the construct and content validity of the IFA observation grid. Specifically, the experts involved were asked to consider the indicators included and express their judgment (on a four-level rating scale) based on the following evaluation criteria:

- for individual indicators: *consistency* with the dimension of the construct to which they refer; *relevance* for the dimension of the construct to which they refer; *clarity* in the formulation of the actions and behaviours to be observed;
- for indicator groups corresponding to the different sub-dimensions of the construct: *representativeness* with respect to the sub-dimension to which they refer.

For each macro-category of indicators, the validation questionnaire also includes a specific space for open comments and suggestions, in which the panelists are required to provide any indications considered useful in order to improve the observation tool (with particular reference to the critical elements identified in the assignment of the scores for the evaluation criteria).

After acknowledging their availability to be part of the panel, at the end of December 2019 the questionnaire was e-mailed to each member of the expert group, together with a brief presentation of the project and the theoretical framework. We are currently collecting the panelists' answers, which will be analyzed and used by the research team, together with the results of the empirical validation, to improve the indicator system.

[3] *Experts of the Italian panel*: Gabriella Agrusti (Università di Roma LUMSA), Guido Benvenuto (Sapienza Università di Roma), Giovanni Bonaiuti (Università degli Studi di Cagliari), Roberta Cardarello (Università di Modena e Reggio Emilia), Cristina Coggi (Università degli Studi di Torino), Cristiano Corsini (Università degli Studi Roma Tre), Ettore Felisatti (Università degli Studi di Padova), Alessandra La Marca (Università degli Studi di Palermo), Elisabetta Nigris (Università degli Studi di Milano-Bicocca), Paola Ricchiardi (Università degli Studi di Torino), Roberto Trinchero (Università degli Studi di Torino), Benedetto Vertecchi (Professore Emerito Università degli Studi Roma Tre), Giuliano Vivanet (Università degli Studi di Cagliari).

Experts of the international panel: Athanasios Gagatsis (University of Cyprus), Simon Leonard (University of South Australia), Lisa O'Keeffe (University of South Australia), Hosun Kang (University of California Irvine), Rossella Santagata (University of California Irvine), Kathleen Stürmer (University of Tubingen), Bruce White (University of South Australia), Adriana Zaragoza (Technical University of Munich).

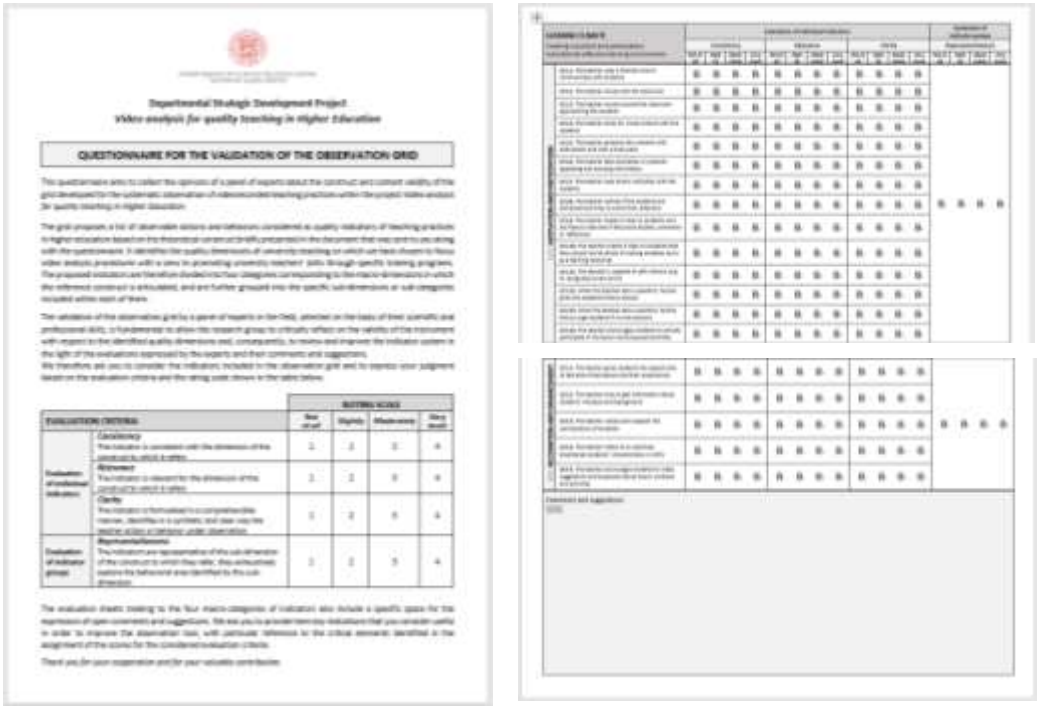

Figure 3. Validation Questionnaire for the panel of experts: presentation and example of a section (learning climate dimension).

As for the second procedure, the empirical validation of the observation tool by the UniBO research group in collaboration with UniSA and UCI is currently underway. It aims to verify the reliability of the indicators in two specific ways:

- through the use of the grid for the systematic observation of some common video sequences in English language and the subsequent comparison between the coding of the expert observers;
- through the use of the observation grid during pilot courses with university teachers in three different higher education contexts (UniBO, UniSA and UCI). During these courses, university teachers will observe the short video sequences first in a open and narrative way and, subsequently, using the grid of indicators. In this way the reliability of the indicators will be checked again in the field.

With regard to the pilot courses, specific monitoring tools are being developed. The incoming and outgoing *professional vision* skills of university teachers will be checked, together with their beliefs on IFA practices.

5. Conclusions

The article outlined the theoretical and methodological framework, objectives and phases of a UniBO Project aimed at promoting IFA practices in university teaching. The basic purpose is to promote teachers' skills in implementing an engaging and active learning environment that supports student learning. This implies an effective accompaniment of the teachers and the video analysis can constitute, in this sense, a very useful support. An example of this in action with pre-service teachers (the UniSA project) demonstrated ways

in which change can be actioned through multi-perspective video analysis, teacher/pre-service teacher collaboration combined with structured, scaffolded reflection.

The results of the validation of the IFA construct and indicators by a panel of experts are currently being analyzed.

The IFA indicator system developed, together with the video analysis platform, will be tested in pilot training courses with university teachers to verify the reliability of the system and its effectiveness in promoting changes in teaching practices and beliefs.

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