What Feedback for Teachers?
A Pilot for the Teacher as a Reflective Practitioner

Elena Mosa, INDIRE, Italy
Silvia Panzavolta, INDIRE, Italy
Francesca Storai, INDIRE, Italy

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Abstract

"Teachers need feedback", said Bill Gates in a famous TED talk speaking about the technique of using videorecording in the classroom. In fact, the use of video is a powerful tool to analyze behaviours and to reflect on implicit teaching routines in a sort of "self-mirroring" activity, as described by Shön in the reflective practitioner theory (1983).

Within the University course "Multimedia research methods" offered by the on line Italian University IUL, addressing CPD for teachers, trainees were asked to record their typical lesson and to analyze it by using a grid derived from research (the School Effectiveness Approach by B. Creemers e L. Kyriakides 2012 and "Visible Learning" by Hattie, 2009).

After analyzing their videos, teachers would visualize their positioning in a Radar diagram helping them to understand what factors should be improved in order to carry out an effective lesson. Furthermore, teachers were asked to peer review the Radar and the grid of a colleague and to receive a first feedback from her/him. This resulted in a very powerful exercise to improve and better plan an effective classroom lesson.

In the second part of the course, the teachers worked in small groups, according to the cooperative learning model, with the task of producing a toolkit, giving operational tips and examples derived from the videorecordings, on how to perform a good lesson.

The paper provides a detailed description of the methodology employed, the corresponding tools and the analysis of the main results coming from the pilot.

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Introduction

This contribution is the result of a research and experimentation activity carried out during the study course "Methods and techniques of educational interactions" promoted by IULine, Telecommunication University born from the consortium between the University of Florence and Indire, Research Institute that has been operating for 90 years in support of innovation processes with regards to the Italian school.

The course "Research methods in the multimedia sector" provided the ideal context to work with a group of teachers mainly coming from primary schools, that took up the challenge to use the videorecording method in class, to analyse the lecture, afterwards.

The course lasted four months, for a total of 10 university formative credits, and was divided in two modules, which videorecording goals, methods and tools were shared in class. The teachers enrolled in the course were 23.

The opportunity to "review" their behaviour and the students' activity from an external perspective offers many reflection and analysis opportunities, aimed at reviewing ineffective teaching methods and boost functional ones. The goal of the proposed activity was to provide a method and some tools that stimulate reflection, based on reflective practitioner that Schön (1983) described as the subject who does not completely rely on the "automatic pilot" of teaching routines, filled with tacit knowledge and often subdued by the mastery of contents and reassurance dictated by practice. The reflective practitioner is the one who triggers these mechanisms and reflects (reflection in the action), he brings out the implicit, challenges it and leverages on doubt as research engine.

The theme of self-evaluation and evaluation is still of interest nowadays in modern society, where organizations, especially public ones, must report their operation (*accountability*) in terms of efficiency and effectiveness. The theme of *accountability* becomes even more important at school where, in order to attain objectives, the processes implemented by the school community must be further controlled. The National Indications for the curriculum of Kindergarten and the First Cycle of Education[1] (2012) highly underscore this need: "*(...) the single school institutions also have the responsibility of self-evaluation, which has the function to introduce reflective methods on the entire organisation of the educational and teaching offer of the school, to develop effectiveness also through social accountability data or data gathered from external evaluations*".

To confirm the indications contained in the document, the recent Reform of the Italian School ("La Buona Scuola", Law 13/07/2015 no. 107 "Reform of the national education and teaching system and delegation for re-organizing applicable legislative provisions") re-asserts the role of each single School in relation to the improvement of educational and school success of students and organisational and teaching processes, through self-evaluation, evaluation and accountability systems.

Therefore, if it is clear why research at school is required, it may not be clear how to make it.

[1] It is a document elaborated by the Italian Ministry of Education that in addition to provide indications concerning the contents of the curriculum, places the school Institution within a research scenario.

Reference theoretical picture

The reflection that led to the choice of the approach and inspired the conception of tools, finds its roots in the need, which is no longer debated, to switch from a school model based on a transmission paradigm, to a paradigm more oriented to the co-construction of knowledge (constructivism or constructionism).

Based on these preambles, the first activities consisted in analysing the Lesson Study method and then analysing the studies and researches concerning School Improvement.

The **Lesson Study** (LS) is a method for the professional development of newly hired teachers and staff, which is frequently adopted in Japan. The system, successfully implemented for many years, is mainly adopted by primary schools with the aim to render an efficient service. The teachers work in teams and identify together potential improvement goals or processes to analyse that lead the review and observation work of their teachings. In this case, the analysis does not necessarily take place with the use of videorecording, but it can be also carried out through direct observation between teachers of the same school or colleagues of other schools or universities.

Even if the LS mainly focuses on the relations established within a classroom, the aim always consists in improving the teaching methods of teachers, in order to achieve a positive spin-off on the students' results.

The LS cycle foresees in fact at least 4 phases:

1. *Research and programming*
2. *Implementation and planning*
3. *Execution of the lecture*
4. *Reflection and improvement*

The method is organized around various work phases that begin by identifying the team (3/6 teachers in average) and goals *(Research and programming)* for which the research is executed (e.g. specific skill that must be promoted/ stimulated in students) and shared planning of lectures and relative observation and data collection criteria *(Implementation and planning)*. Afterwards, there is the actual observation phase, during which a team member carries out a lecture *(Execution of the lecture)* and the others observe according to shared criteria. At the end of this phase, the teachers analyse the collected data, compare the results of the observation and formulate hypothesis and strategies to improve/ boost the teaching methods *(Reflection and improvement)*.

This method is becoming increasingly widespread also in the United States (sector K-12) and numerous European countries.

With regards to the branch of research concerning **School Improvement,** explicit reference was made to the works carried out by B. Creemers and L. Kyriakides (2005, 2006, 2012) inspired by the Educational Effectiveness Research (EER). Starting from these theoretical premises, based on empiric research, researchers felt the need to place teaching practices in a larger context, going beyond learning results and analysing in-depth, the processes that lead to improvement.

The reference model is the Dynamic Approaches to School Improvement (DASI) which describes the improvement activities on four levels (Creemers and Kyriakides, 2011): students, class, school, context/ system.

Starting from these preambles, Creemers and Kyriakides proposed a dynamic and multi-level analysis model, based on five dimensions ("frequency", "focus", "stage", "quality", "differentiation"), and eight factors ("orientation", "structuring", "modelling", "questioning", "application", "management of time", "classroom as a learning environment") in relation to which, it is necessary to identify any relations or intersections.

The choice made in this research consisted in grouping up the factors identified by DASI from eight to six, since this review allowed locating said factors in relation to the Italian school system. An additional review was made in view of the elements that stood out as efficacy indicators in class teachings by Hattie (2009), who provided a relevant range of factors with an "effect size" such to hypothesise a key role in pursuing teaching efficiency and learning results. These factors can be linked to six macro-categories: students, family, school, curriculum, teachers and teaching strategies.

The implementation of factors and contextualization of sizes will be explained more in details in the next paragraph.
The synthesis of the aforementioned works led to the creation of an evaluation Grid (re-adapted by the teacher-researchers and built around six of the eight indicators of the DASI model) and a "Radar", a graphic representation executed thanks to the specific use of a calculation sheet, that shows the results of the analysis (both will be explained later on in details).

The Radar also refers to a known theoretical approach in quality models (TQM) and in particular, derived from the EFQM model. By recalling that Radar is also acronym of *Results*, *Approach*, *Deployment*, *Assessment*, *Review,* we understand how important it was to propose it for purposes of the teaching activity. The Radar allowed the teachers attending the course to immediately and easily identify the points of strength and weakness of their performance. Once the self-evaluation has been carried out, the teacher attending the course was invited to describe, through an individual Improvement plan (Teacher Improvement Plan), a series of actions that would have been taken as guidelines to improve the critical aspects identified from observation and visualized through the Radar. This tool, which derives from a larger study carried out by the teachers-researchers on the Improvement Plan of the school, which theoretical approach is inspired to the aforementioned theories of School Improvement and quality models (TQM), is still scarcely diffused in the teaching practice. Due to the limited time available for the experiment, it was not possible to analyse this theme in depth, which was instead extremely appreciated by the teachers attending the course.

This experience, within the limits of the narrow target that was used for the experiment, falls within a research-action work, which results are described in this contribution.

Methodology and instruments

Teaching implied the use of different tools, with the goal to help the teacher in the proposed activities.
The tools are: Grid for self-analysis, the program to build and visualize the Radar (Radar builder) and the Teacher Improvement Plan (TIP).

Phase 1: the first module implied the recording of the teacher's lecture. The advantages in using the video were multiple: as reflection and metacognition tool, since it allowed the teacher to observe his/her activity within a daily context and offered the possibility to analyse the various sections of the lecture. It also offered the opportunity, which constituted an added value, to compare the results with those of other teachers, for a more exhaustive and shared reflection. The teachers attending the course were given materials and lecture notes (warm-up) on the teaching methodology. Afterwards, it was requested to videorecord a "typical" lecture, possibly till the end. The subsequent analysis work was not disclosed intentionally, in order not to influence the choice of the lecture to record. After a first moment of surprise and perplexity, which was overcome with the establishment of an atmosphere of mutual inter-dependence and clarifications on the purposes of the recording (which purpose was not aimed at evaluation, but to provide useful suggestions for the analysis), each teacher recorded the lecture in class. An alternative plan was offered to those teachers that were not able to record their lecture for different reasons, meaning the choice of a lecture that the teachers were able to find online, who however, had to justify the choice.

The protocol

Phase 1: preparation of the recordings – Step for the teacher

1. Make sure that all the necessary permits are gathered for the activity that will be performed (parents' waivers, authorisations of the Head of School, etc.)
2. Inform the students and families that the lecture will be recorded for professional training purposes
3. Prepare the recording setting in class
4. Position the video camera so that all the environment where the lecture is given, is visible
5. Do a test to put the class at ease and evaluate if the audio is clear

Phase 2: the video recording phase implied the execution of a typical lecture (of at least 45 minutes) in order to have a clear perception of the dynamics and activities foreseen by the teacher. The recording did not require a professional quality, however it was important that the audio was clear and therefore it could be used for subsequent analysis. The video had to be saved and shared on the dedicated platform or linked, using a videosharing platform (also in private mode for privacy reasons).

The protocol

Phase 2: video recording – Step for the teacher
1. Carry out the lecture as usual
2. Choose a typical lecture of at least 45 minutes
3. Begin recording also with a mobile device
4. Save the film for subsequent analysis

Phase 3: once the lecture was recorded, the teacher was asked to use self-analysis and reflection tools of their own lectures, developed by the teachers-researchers of the course, according to the foreseen indicators. Once this activity was performed, which was also foreseeing the attribution of a score, the teacher attending the course was invited to input the results in the Radar Builder, therefore the points of strength and weakness could be immediately visualized.

The last activity, which ended the first module, introduced a sharing, comparison and review work of the professional performance of each individual. As previously described, the proposed Grid for self-analysis is inspired to the indicators derived from DASI dynamic model (Creemers - Kyriakides 2012) and to Hattie's work (2009). Compared to the DASI model, which describes improvement interventions on four levels (students, class, school, context/ system), this teaching was based only on the level concerning the class, according to which the good outcome of students' performances is associated to certain factors that can be observed in class. The model's emphasis focuses not so much on a specific scheme, but on the integration of certain factors that determine efficacy.

The Grid's indicators are presented below:

1. *Organisation and structure of the lecture:* structuring of the lecture in terms of methodological-teaching components, form of message, relations with contents already dealt with, and with phenomena linked to the student's personal life. Description provided by the teacher on the reasons why a certain content is learnt.
2. *Problematization:* behaviour of the teacher aimed at the problematization of contents, posing questions, answering students' doubts and favouring/ promoting discussion on a new content.
3. *Examples and application:* opportunities in terms of: modelling (the teacher provides behavioural models, cognitive, emotional and relational strategies that the students can follow and copy); application (the teacher foresees exercises, experiments, etc., ensuring the processing of new contents in an active way, by students).
4. *Time management:* management of the activities, avoiding waste of time by the teacher and organizing the school-time at best, as well as the time for studying at home.

5. *Learning environment:* the class is perceived as a learning environment, profitable in terms of learning and socialization.
6. *Evaluation and metacognition:* presence of evaluation, self-evaluation elements, evaluation among colleagues and description/ sharing of associated criteria. Attention to metacognitive aspects.

Considering the importance of ICT in school, the contents proposed in the sheet were also integrated with the information that stands out from researches, on evidences concerning technologies. In fact, according to the theory of Creemers and Kyriakides, each indicator is then measured according to the *focus* (the consistency level of the objectives associated to the indicator), *stage* (the temporal dimension of the indicator that responds to question <<when does it occur, in which specific moment?>>), *quality* (the qualitative scale of the indicator, gradually modulated, for example in a scale of "low, medium, high" type), *differentiation* (the adaptation level of the indicator according to the characteristics of the single student). The Grid implied, in addition to the four levels, also the virtuous use of ICT.

Each indicator, in addition to be described, was detailed by sub-indicators that delimit the topic in order to restrict the sphere, and by some guiding questions that led the teacher attending the course in the reflective review of his/her lecture. This allowed the teachers to observe the activity carried out through a general picture, also thanks to the use of the RadarBuilder. The logic underlying the RADAR is in fact of sequential type and responds to a self-evaluative reflection. Therefore, it is possible to identify compared to the various ones analysed, the most consistent areas and the weakest ones, determining a virtuous improvement cycle aimed at triggering a strategic change of a teacher's work. At this point, after performing a self-analysis and visualizing it through the obtained figure, the teacher attending the course was asked to indicate in the TIP, which actions she/he was considering to take in order to improve his/her performance. The format provided to the teachers attending the course was intentionally left blank, so that each of them, independently, was able to decide what to write, whether to introduce innovations and changes in the lecture or consolidate the activity carried out.

The protocol

Phase 3: analysis of the video – Step for the teacher

1. Watch the recording at least once in full
2. Watch the recording, paying attention to attribute a score to the indicators according to the Grid
3. Input the values that you attributed to yourself, in the *RadarBuilder* tool
4. Build your Radar
5. Elaborate the Teacher Improvement Plan (TIP)

Phase 4: in switching from the individual phase to the collaborative phase in small group, an optional activity was foreseen, that of *peer review* in couples, where the students could review the performance analysis of another teacher attending the course.

This activity had two main objectives:
1. provide to the teacher attending the course, an external reading of his/her performance that could have been compared to that of another teacher;
2. train the teacher attending the course to the analysis of the performance with greater detachment: when we have to evaluate the "quality" of an activity carried out by us, we are more lenient (as described further on).

In the *peer review*, each couple had the task to see, through the same self-analysis indicators, the performance of the other teacher attending the course, allowing a more objective and detached reading.

The activity allowed the teacher to experiment an innovative dimension, compared to the character according to which lectures are generally held: the doors of the classroom opened up to welcome external observers, and in this case, we are not talking about expert consultants, but colleagues.
As in the LS (that in reality it takes place live, with colleagues that enter the classroom), this teaching also offers the opportunity to compare the activity performed and provide to a colleague, the detailed and accurate observation of what took place in class, in its natural authenticity, boosted however by the use of the video.
The activity led to a comparison between two teachers attending the course, that "observed" each other, therefore it was based on a much higher collaboration level that allowed reaching the last step of the module, consisting in elaborating *Guidelines* for preparing effective lectures.

The protocol

Phase 4: peer review – Step for the teacher
1. Exchange your video with that of another teacher
2. Analyse the video of your colleague with the same indicator scheme
3. Input the assigned values on the specific program (RadarBuilder)
4. Build the Radar of your colleague
5. Once you have the analysis of your colleague, compare it with yours

The activity could be repeated with other colleagues, thus obtaining a mixed analysis.

Phase 5: this phase introduced the second module, featuring as objectives, contents and relations with colleagues. In terms of content, the students, grouped up in small groups with defined roles, were asked to elaborate *Guidelines* for preparing effective lectures, as mentioned in the literature in the preamble, and evidences that stood out on personal practices and those of other colleagues. Specific roles and tasks were foreseen for each group (team leader, editor, editor-in-chief, surfer, and equal evaluator). At relational level, it stood out how the positive inter-dependence in the small group was a shared objective of the course that, since it was entirely held

online, it required greater emotional and motivational "incentives" compared to homework in class.

The protocol

Phase 5: building the community – Step for the teacher

Reflect on the points of strength and weakness, using the Radar
Discuss the work carried out in the small group

Sharing and discussion of videos and other analysis tools are boosted with the use of an online environment dedicated to build a professional development community.

Phase 6: In this phase, which concludes the course, it was requested to re-formulate the contents expressed by sub-groups in a single product that could be diffused outside. The target consisted of other teachers, also not attending the course, to whom simple and clear suggestions had to be given with regards on what to do, in order to improve learning/ teaching processes (with or without ICT). A not too technical informing style was requested, with examples of effective or ineffective behaviours in order to orient more structured and aware performances.

Analysis of data

Self-analysis of videos
Only the data that stood out from the videorecordings took by the teachers attending the course (n=11) was taken in consideration for the analysis, therefore excluding the works of those teachers that chose a video online.
The activity was experimental and similar to a research-action process, the teachers-researchers subjected the protocol and tools to review by the same teachers attending the course.

The research was focused on two aspects:

1. *Socialize the reflections generated by the activity carried out.* The following questions were posed: was it useful to carry out this activity? If yes, which elements of knowledge it provided? Which kind of awareness it arose? Did you have more surprises or more confirmations? Which ones? Which aspects of the single lecture ("microcosm") are re-proposed in your usual way to hold lectures, in your teaching process ("macrocosm")? And so on.

2. *Provide a feedback on the tools used in the activity* (Grid + Radar + TIP). Stimulating questions were posed, such as: are the proposed tools effective together? In this order? Is any tool missing? Can this kit be re-proposed to others? In different contexts? Doesn't the Grid feature significant elements? Etc. Some examples are significant and we thought interesting to transcribe some parts.

> *"Yes, it was useful to carry out this activity, because it helped me identifying those attitudes/ behaviours that are part of my daily routine, but they require improvement and there is the risk that the awareness and need of improvement are often overlooked, overwhelmed by consolidated practice; at the same time, this activity encouraged me with regards to the points of strength that stood out"*. Or even: *"I found the videorecording experience extremely helpful at professional and also personal level. Seeing myself in the lecture, has almost mitigated the sense of anxiety I had before recording, under many aspects, I appreciated the video, I thought that while I was giving the lecture, sometimes I was forgetting I was being recorded, I liked the proposed work, in terms of content and the context of this "microcosm"/ lecture, therefore a meaningful activity, where the students were perfectly aware of the references. I would like to propose it to my supervisor colleagues, as an "experimental" trial for students that carry out their apprenticeship in class. An enriching experience also at personal level: "being true" with yourself, an exercise that I appreciated!".*

All the teachers attending the course found the proposed activity extremely useful, also providing interesting suggestions on how to improve the observation and analysis protocol. Moreover, one of the analysis that can be carried out, concerns the cross-reading of all Radars of the teachers attending the course, to observe the trends. The following graph contains this analysis (fig. 1).

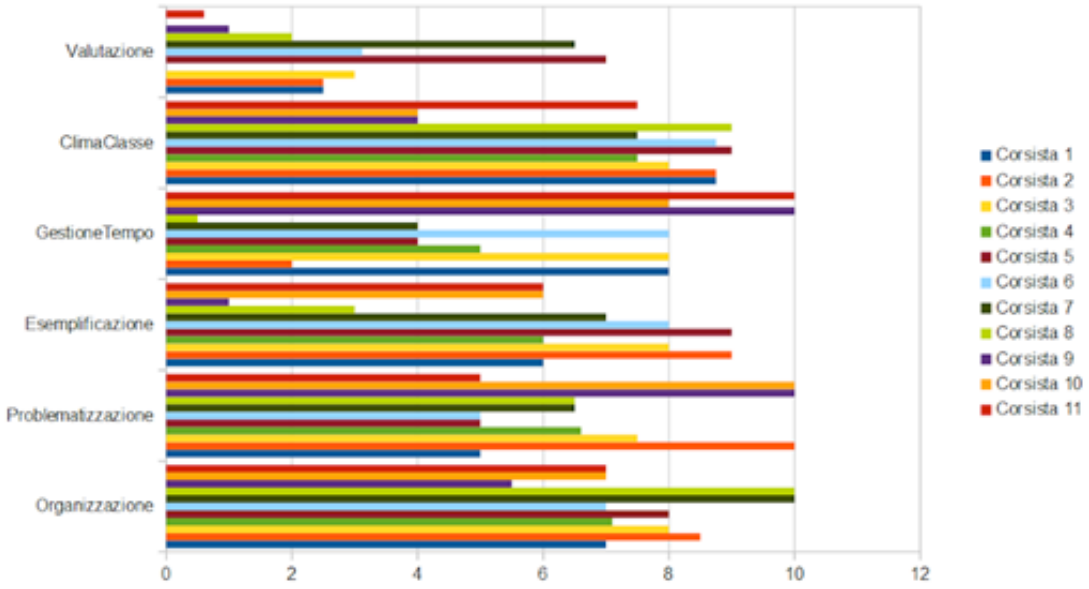

Fig. 1: comparative analysis of the individual self-analysis of the teachers attending the course

By carrying out an average of values of each teacher attending the course based on the various indicators, it is possible to obtain a graph that shows that the most critical indicator is the one concerning "Evaluation/ metacognition", while a strong indicator is that concerning the “Organization and structure of the lecture”, always object of greater attention, perhaps for a consolidated tradition of teaching planning. Attention to “Problematization”, therefore to the implementation of lab processes (problem solving, problem posing, application of learnt knowledge, teaching workshops, etc.) is good in average, as well as the classroom atmosphere. The “example and application” level needs improvement (fig. 2).

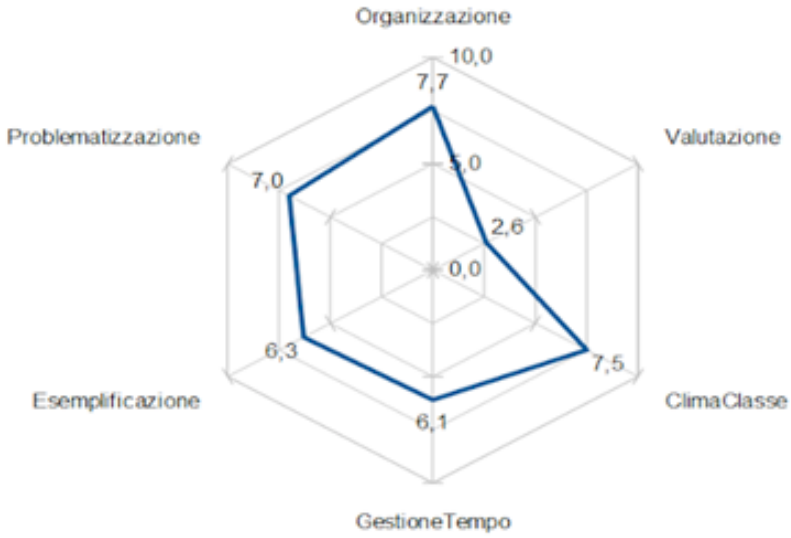

Fig. 2: visual representation of the trends in relation to each single indicator

2. Peer review

Some interesting considerations stood out from a comparison carried out on the Radars of the four couples of teachers attending the course that decided to execute the activity in peer review[2].
In fact, it is possible to identify a general trend in assigning scores, according to which the teacher of the lecture (teacher A) is in average more generous with himself/herself, compared to the external observer (teacher B).

Two Radars are compared below as an example.

Indicator	Score Teacher A	Score Teacher B
Organisation and structure of the lecture	6	4
Problematization	6	5
Examples and application	9	6
Time management	1	4
The class as learning environment	7	6
Evaluation and metacognition	7,5	1,5

The visual representation of the two overlapped Radars is shown below:

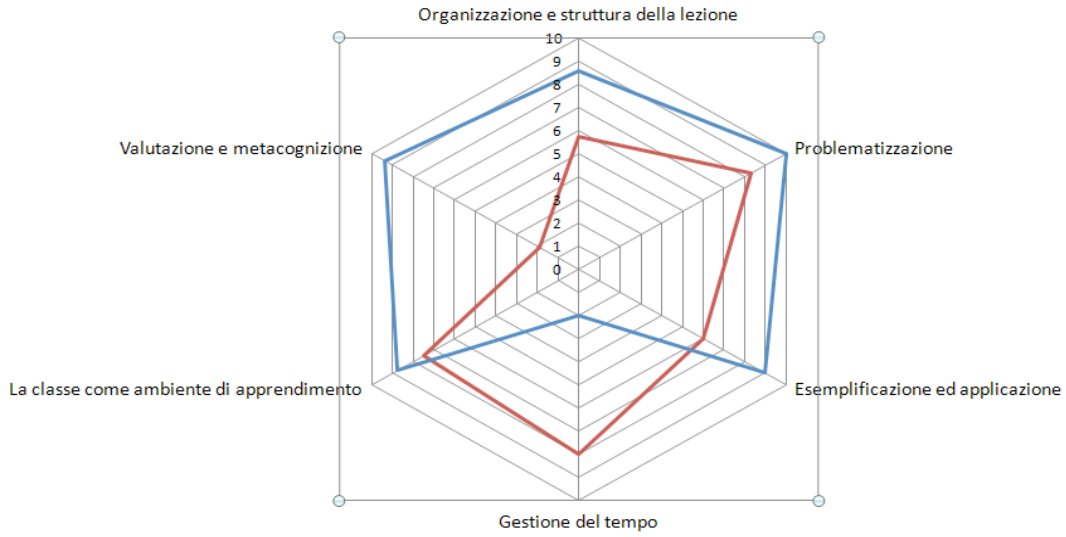

Fig. 3: visual overlapping of the radar of a couple of the peer review concerning the video of student A

As it can be clearly inferred from comparing the data and relative Radars, a perception disagreement stands out that mainly shows in indicators "time management" (positively evaluated by B and negatively by A) and "evaluation and metacognition" (positively evaluated by A and negatively by B).

[2]We indicate as teacher A, the teacher holding the lecture and carrying out his/her own self-analysis; we indicate teacher B, the teacher that offers a critical review of the work of the colleague from an external point of view.

In our opinion, this result can be ascribed to the series of information and data of the context relative to the teacher, result of routine elements which are not always expressed, as it can be inferred in case of the evaluation parameter.

From a separate analysis of data that stood out from the peer review, we can also determine that the most significant inconsistency is registered with regards to criterion "Evaluation and metacognition" (average value: -1.187), while the most consistent level is the "Organization and structure of the lecture" (average values: 0). The former, as previously seen, is the factor that stood out as the weakest also in individual analysis, while the second represents a "strong" theme in the teacher's culture, traditionally linked to the planning of the lecture.

The pilot experience also shows the need to expand the number of colleagues that act as teacher B, in order to do an average of the results and reduce the perceptive variance margin.

Moreover, we also believe that thanks to the identified differences, the potential of the peer review stands out in favouring a reflective attitude completed by multiple perspectives.

Conclusions and future developments

From the feedback received in the experiment carried out during IUL teaching, a first positive result can be inferred. Some interesting inputs coming from the teachers attending the course provide reviews and adaptations of the tools used, especially with regards to the two orientations described below.

First of all, the object of analysis should be oriented towards a cycle of lectures linked to cover a curriculum topic or didactic unit, rather than a single lecture. The reasons for the above, consists in the fact that the identification of certain Grid indicators may depend on the specific character of the subject which is not necessarily entirely covered in a single lecture (e.g.: in a didactic unit on Egyptian civilization, consisting of three lectures, the teacher could introduce some aspects of the six indicators inconsistently).

Secondly, the presence or absence of some Grid indicators, as well as their weight in relation to the assigned score, could require an adaptation with regards to different school levels.

Moreover, this research will be further implemented in the future with the purpose to plan and develop a software able to boost the skills of the RadarBuilder.

This software should allow the management of a wide range of data that will stand out from the videorecordings of the single teacher, from a diachronic view within the single class, and also from the cross-review of his/her performance in different classrooms. The acquisition of such extent of information constitutes the premises to measure, analyse and re-elaborate data on the teacher's activity within the reference context in order to understand and improve the dynamics and professional routines (Teaching Analytics and Data-driven Improvement).

In conclusion, an additional goal to pursue will consist in building a teacher community to favour an exchange among colleagues and a comparison with a larger number of subjects (e.g. other researches) that focus on the improvement of performances through classroom observation methods with the support of videos.

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Author Contacts Information
Elena Mosa: e.mosa@indire.it
Silvia Panzavolta: s.panzavolta@indire.it
Francesca Storai: f.storai@indire.it