Developing university students' feedback literacy through peer feedback activities

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Abstract

In order to make feedback become a process leading didactic practises it is necessary to overcome the static and single-directional vision linked to providing and receiving feedback and to go towards an interactive and generative feedback, foreseeing some peer feedback moments, some self-evaluation and self- regulation. In this paper we would like to describe a didactic path focused on feedback, activated in two University courses in different Universities with the following aims:

- activating subsequent feedback spirals (Carless, 2019), first between Professor and students, then between peers, to get to a self-awareness interior process, that is an incorporation of reflexivity on one's own practices.
- Promoting feedback literacy (Carless and Boud, 2018) in the student through the experimentation in the practice.

In particular, we will account for a peer feedback process realised in the following steps: a) the group production of a learning design; b) the peer review of the colleagues' designs, through the "Ladder of Feedback" protocol, with a following sharing of the reviews; c) the subsequent reflection on the activated processes through a questionnaire on the students' perceptions. The analysis of those productions enables us to reflect upon the sense of effectiveness granted to the peer feedback, on the differences between the Professor's and the peer feedbacks, on the comprehension of the role of the peer feedback within the training process.

Key words: Peer feedback; Higher education; Students perception; Feedback Literacy.

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1. Introduction

The necessary evolution of university didactics requires learning environments designed in an ecosystemic form (Jeladze *et al*., 2017). Inside them one should replace the "old-fashioned" university lesson by learning centered approaches (Winstone and Carless, 2019) and collaborative and dialogical ways making use of the technologies. The student's activation, the interaction, the metacognition are essential elements to the co-building of knowledge through conversational models of exchange and mutual transformation between all the actors of the training ecosystem (Laurillard, 2012).

Feedback can be the support tool for a meaningful and deep learning, which is not a simple assimilation of contents, but a mobilization of competences and an assuming of postures that are useful mainly in the university courses aiming at a professionalization. According to the thought by Carless (2019), the activation of subsequent feedback spirals, first between the Professor and the students and then between peers, enables to reach an interior self-awareness process, that is an incorporation of reflexivity on one's own practices. The student's Feedback Literacy (Carless and Boud, 2018) is therefore a process that must be encouraged and taught, mainly through experimentation in the practice and the use of suitable tools.

For this reason, we mean to introduce the outcomes of a research related to the perceptions the students have on a feedback process tested in an University course. These were the questions that led the research:

- Which perceptions do students develop related to feedback and to its effects on their own learning process?
- Which type of awareness related to their learnings can students develop through the peer feedback tool?
- Can experimenting feedback and peer feedback and reflecting on the same practices favour development of the students' Feedback Literacy?

2. Background

The most recent literature focuses on a learning centred approach to feedback (Winstone and Carless, 2019; Winstone and Boud, 2022) placing the interactions between the students and the Professor, the active and personal

interpretation and the transformative use by the students also in terms of self-improvement and self-regulation at the centre (Laici, 2021).

Such new approach to feedback can be supported through the promotion of the *Feedback Literacy* (FL) (Carless and Boud, 2018) that for the student means effectively understand what feedback is, being able to attribute a meaning to the information, being able to effectively manage feedback from the relationship and affection point of view and also being able to use it productively in a way oriented to improvement and self-regulation, all within a logic of co-responsibility with the Professor and the peers (Sutton, 2012; Carless and Boud, 2018). The main features of FL according to Carless and Boud (2018) are:

Appreciating feedback. The students' capacity of understanding what feedback is, of appreciating its value for their learning and understanding their active role as protagonists in the feedback process, are all aspects that have to be build and developed and cannot be given for granted. Students often have a limited conception of feedback referred to the comment they receive from the Professor on a task, as "feedback as telling" and as corrective feedback where they are told exactly what to do either in order to correct their task or to improve their mark. Such approach is not only a limited vision of the feedback process, but it is also little effective as it does not account for the fact that students often do not have the tools to decodify and to convey the feedback message, and therefore to apply it, to take decisions according to it or to formulate evaluative judgements (Sadler, 2010). The dis-alignment between the students' and the Professors' vision of feedback is basically one of the most meaningful barriers in the students' effective involvement in feedback processes and in the effectiveness of the process itself in transformative terms. On the other hand the students that developed FL both understand and appreciate the role of feedback related to the improvement of their current and future work and understand their role as active subjects in the feedback process (in addition to the reception and the interpretation of a comment); they are able to acknowledge that feedback is a process that can involve both different sources and actors and that can also get through different forms; in addition they also use technologies to effectively manage feedback not only in terms of memorisation, but as a reflexive return on the path (Carless and Boud, 2018).

Making judgements. Formulating evaluative judgements on one's own and someone else's work is an important feature of FL as it actively involves the students that are asked to perform a reflexive and progressively self-evaluative activity that helps to make the judgements, formulated according to the clarified criteria, more and more grounded and relevant (Carless and Boud, 2018). Formulating evaluative judgements includes the involvement of important processes such as the decisional skills, the self-evaluation, the metacognition,

the expertise. Formulating more and more autonomous judgements in addition helps the students to acknowledge a quality product, to compare it to their own one and, therefore, to improve it, activating a process recalling the students' progressive independence from their Professors (Grion and Serbati, 2019; Serbati *et al.*, 2019; Ajjawi *et al.*, 2018). It is important, therefore, that the students are offered the possibility of facing evaluative experiences where they are the active protagonists, starting from the sharing and the co-building of evaluative criteria, for example with the building of rubrics, the collective analysis of exemplar, and through the participation in peer feedback and peer-review activities.

Managing affects. Another aspect not to be undervalued in the FL is linked to the positive and constructive management of feelings, of emotional states and attitudes involved in the feedback process and to the kind of relationships established with the feedback actors. Building a peaceful environment and the constant promotion of a trustful mood are essential elements to avoid both closure attitudes and defensive answers, especially when facing some feedback perceived as a criticism. Feedback instead needs an attitude of mutual respect and of listening to different points of view so as to open new perspectives enabling some improvement. The students need to understand that their Professors care about their learning and their colleagues can be resources to explore different perspectives, looking at the tasks in a new way and improving their path. Accepting there can also be negative feelings is important, but at the same time it is essential to be able to manage such feelings continuing to use feedback for improving (Winstone and Carless, 2019). Therefore, it is necessary to promote FL in order to help students to keep some balance and avoid defensive approaches, to welcome external advice and develop an attitude leading to an ongoing improvement (Carless and Boud, 2018).

Taking action. In the proposal by Carless and Boud (2018) the three features listed above interact to promote a further characteristic in an optimal way, that is the students' activation in the feedback processes. This aspect, first of all, implies that the students perceive themselves as active subjects in the feedback process, considering it as a path to the current and future improvement and that sees them committed in the production of evaluative judgements for themselves and for the others, in a constructive mood. It also foresees that they understand the importance of finding different strategies to activate themselves and to act in relation to feedback. Sutton (2012) underlines how the FL requires the students to act on the received comments. This aspect is probably the most complex one to design and to realize as the professors do not have to give it for granted that their students can already know how to use feedback, rather they must support them and guide them to understand and convey feedback, its language, and to understand how it can become a resource even for further

works and which strategies they should therefore use to activate themselves (Winstone and Carless, 2019). The students must be able to re-elaborate feedback and have the chances and opportunities along time to use it actively, to improve both the current works and the future ones, experimenting recursive or iterative feedback loops or as suggested by Carless (2019) of the feedback spirals.

It is necessary to offer students opportunities in which to promote progressive autonomy and their self-regulation. In order to do this, it is important for them to be able to deal with feedback practices that effectively put them in a position to be active, which allow them to co-build interpretation paths and processes, as well as processes of action and reflection, within a dialogical and transformative process. Among the effective strategies in this regard, there is peer review and the related production and reception of peer feedback.

In this perspective, peer feedback, defined as «a communication process through which students enter into a dialogue about performance and standards» (Liu and Carless, 2006, p. 281), initiates active and self-directed learning modes, which includes social interaction and mutual teaching (Simonsmeier *et al*., 2020).

Receiving feedback from peers helps students to identify and understand their mistakes before assessment, develop objectivity in relation to standards (Nicol and MacFarlane-Dick, 2006), and monitor their own work process and progress (Butler and Winne, 1995).

According to David Nicol (2019), *peer review* in particular refers to scenarios in which students are involved in evaluating and formulating a judgment for peers or in elaborating a written comment regarding the quality or adequacy of a piece of work carried out by their peers. The path generally requires students to first be engaged in the production of a written task of various kinds, then the students are involved in the process of *providing* feedback on some work by their peers on the basis of previously clarified and perhaps co-built criteria. Some elements are then identified on which the peers are invited to reflect; once the reviews have been completed, the students receive the feedback developed by their peers and have the possibility of grasping the different points of view and perspectives and, hopefully, have the possibility of making improvements to the elaborated task.

Having the opportunity to share a mutual feedback process with peers allows students to self-assess their work more effectively, precisely because they are involved in a process of comparing their work with that of others (McConlogue, 2015). The process of receiving feedback is more effective if the students have first produced the feedback for their peers: in this way they will be able to better

interpret the comments received and make more focused and informed decisions regarding the improvement to be made (Grion and Serbati, 2019).

It is also important to have opportunities to provide feedback based on shared criteria, as according to researches conducted in this sector, learning is generated in both the processes of providing and receiving feedback (Grion and Serbati, 2019; Topping, 2009; Harland *et al.*, 2017; Nicol, Thomson and Breslin, 2014; Nicol, 2019; 2021). Nicol underlines that the process of producing feedback for others in peer review is particularly important because it would seem to bring benefits in terms of learning, even without sharing the comments formulated. The benefits would be greater than receiving feedback, because providing feedback is more cognitively demanding, as higher-order processes such as applying criteria, analysing and solving problems are involved (Nicol, 2019; Nicol *et al.*, 2014).

To favour the development of the FL, it is important to support the peer-review process by setting up a learning environment in which a mood of mutual trust and respect is experienced in order to productively manage the interpersonal and emotional aspects, to be able to share the peer feedback by learning to receive and provide constructive feedback. To support students in this path in which a "culture of trust" can be experienced, the *Ladder of Feedback* protocol can be used. This protocol was originally conceived by Perkins and Wilson of the Harvard Graduate School of Education/Project Zero (Perkins, 2003), and designed precisely to offer a guide to students in providing supportive feedback on tasks, projects and ideas.

3. Description of the path

To develop both FL and students' awareness of their own learning processes, we structured two parallel university courses held in the academic year 2021-22 promoting student uptake of feedback and the closing of feedback loops and using the recursion between theory and practice as fundamental elements of curriculum design (Boud and Molloy, 2013).

The two courses involved 145 Primary Education students attending the Education and Learning Technologies course of the University of Macerata and 31 Pedagogical Sciences students attending the Educational Design course of the University of Chieti-Pescara.

During the first part of the course, we experimented with a series of useful methods for activating the feedback circuit between Professor and student and letting the student grow accustomed to reflexivity on their learning processes, stimulating the ability to ask themselves and others meaningful questions. Subsequently, to facilitate the transition from informative feedback to feedback

as a process (Laici and Pentucci, 2019), we moved on to peer feedback (Gielen *et al.*, 2010; Laici, 2021), delegating the responsibility of the feedback process to the students and encouraging dialogue and reflection (Nicol, 2019).

The students worked as follows:

Designing a lesson. The students, in groups of 4-5 people, after viewing and discussing an exemplar (Carless and Chan, 2017) of lessons during the course, designed a didactic activity intended for preschool or primary school pupils, through a given design pattern (Rossi and Pentucci, 2021). The design was shared via several blended learning-ready online repositories.

Peer review: mutual review and feedback production. Each group was assigned to review the tasks of other groups. The tool used to support the experience was the *Ladder of Feedback* protocol (Wilson *et al.*, 2005; Perkins, 2003; McFarland, 2006) which provides for a series of successive steps that guide the formulation of peer feedback: clarify, value, concerns and suggest.

Reading feedback from peers and reformulating the design. The various groups looked at the feedback provided by their peers and, if they deemed it appropriate, modified their work based on the suggestions received.

Reflection on the experience. After the experience, a questionnaire was administered that collected students' perceptions on the different feedback methods experienced and their ideas on the role and usefulness of feedback with respect to their learning processes (Nicol, 2019).

4. Methodology

The reflection questionnaire was used to collect data on students' perceptions. The questionnaire consists of 9 open questions, built starting from a conspicuous exploration, by the authors, of the theme of feedback in university teaching and from the various experiments carried out on groups of students.

The macro-theme of reference is that of peer feedback and the focus is on the acquisition of awareness on the feedback processes by the students. This was done in order to implement useful practices for the FL in students. For this reason, we have analysed 6 of the 9 questions (see Tab. 1), leaving the other 3 for a subsequent and specific analysis, which will be the subject of another paper. In particular, this further analysis shall examine the relational aspect of the FL with questions that explore the use of the *Ladder of Feedback* protocol.

Tab. 1 - Analysed questions

Question number	Question
1	Which benefits do you think there could be in "providing feedback" to one's own colleagues?
2	Along the feedback elaboration process for the colleagues, have you had the chance of thinking about your design? If so, about which aspects?
4	Which benefits do you think there could be in "receiving feedback" from one's own colleagues??
6	Do you think it is useful to re-elaborate/modify together with your group the design according to the received feedback? Would/will you do it? Please, explain.
7	In general, do you think you have learnt more from PROVIDING some feedback, that is performing the revision through the Ladder of Feedback offering feedback to your colleagues on their design, or from RECEIVING some feedback from your peers about your design?
8	Which do you think the differences between the feedback given by the Professor and the one that happens between peers are? Which is more effective according to you?
9	If you had to explain what peer-feedback is to a peer who has never experienced it, how would you define it?

We read the questionnaire using the model of Braun and Clarke (2019), known as *reflexive thematic analysis*. We chose an inductive approach, since the coding tags were selected starting from the qualitative and reflexive interpretation of the data itself (Braun *et al*., 2019), trying to bring out the latent meanings, ideas and conceptualisations underlying the data and referring to the previously exposed theoretical framework, whose assumptions and concepts represented an important filter to explain the data (Terry *et al*., 2017). The codings thus generated, reviewed and verified in a comparative manner by both researchers separately (Braun and Clarke, 2012), were aggregated into broader themes "in order to organise the story into a coherent and internally consistent account" (Braun and Clarke, 2006, p. 22). In particular, the most convincing excerpts were then re-read and identified to support and name each of the topics collected. These operations were carried out both manually and with the support of text analysis software from Voyant Tools, a Creative Commons licensed web environment for reading and analysing digital texts, designed and implemented by Stéfan Sinclair and Geoffrey Rockwell (2016).

5. Results and discussion

Feedback was the characterising element of the entire learning ecosystem

designed. In fact, the students were able to experience a path that engaged them both in the use of metacognitive and reflective tools, as facilitators to activate feedback loops with the Professor, and in the viewing of exemplars, useful for understanding the mechanisms and evaluation and quality criteria of a product, and in peer feedback activities, in which they were able to mutually analyse the tasks, reflect, formulate judgments and exchange comments.

The questions of the questionnaire were analysed and gathered, taking into account the different characteristics of the FL, starting from the conceptualisation of the feedback and the perceived differences between the feedback offered by the professor and by the peers, to the importance attributed to providing and receiving feedback and then to the formulation of judgments on one's own and others' tasks, up to the activation and productive use of feedback.

Students during the course were able to experience both professor feedback and peer feedback. We therefore asked them to express a preference and to explain the perceived differences between the two methods (Question no. 8). The relative majority of students (34% of the sample) declare that they found peer feedback more useful, while 27% find no difference in terms of effectiveness between the two types. Only 36 students out of the 169 who took part in the questionnaire consider the feedback provided by the Professor to be more effective (see Tab. 2).

Tab. 2 - *Perception of the effectiveness of peer feedback and of the Professor's feedback*

	No.	%
Peer-feedback	58	34,3%
Professor's feedback	36	21,3%
Equal effectiveness	46	27,2%
Does not express any preference	29	17,2%

To understand the reasons for these preferences, we once again used post-response coding. We have analysed the terms through which students qualify the two feedback methods and we have drawn 30 tags in the form of adjectives that connote the Professor's feedback and 33 that connote the feedback of peers. The processing of the tags, carried out with the *Cirrus* tool of the Voyant Tools platform (Figures 1 and 2), showed that the perception of the characteristics attributed to the Professor's feedback is more unambiguous: the adjective «expert» emerges, which is present in the 43 % of the answers, and the

adjectives «evaluative» (12%) and «judgmental» (8%) follow, with a certain distance.

Peer feedback, on the other hand, is perceived in more differentiated ways. The emerging quality is that of reflexivity (18%), but equally evident is the attribution of a series of characteristics linked to a perception of closeness, of sociability generated by peer feedback, considered advice more than a judgement, an activator of exchanges and dialogic, empathetic and informal comparisons.

Fig. 1 - Word cloud representing the occurrences of the tags attributed to the Professor's feedback

Fig. 2 - Word cloud representing the occurrences of the tags attributed to peer feedback

In order to understand if such path led the students towards some awareness and the conceptualization, they were asked an open question (Question no. 9) requiring the definition of peer feedback, elaborated according to their learning experience.

The answers were analysed through a following codification: the cross-reading and the tag aggregation led to the identification of 7 topics within which it was possible to gather the students' ideas, as it comes out in Tab. 3.

Tab. 3 - Codifications of answer nr. 14, related to the request of defining peer feedback

	N	%
exchange	36	21,3%
reflection	16	9,5%
review	17	10,1%
evaluation	43	25,4%
comparison	43	25,4%
knowledge	3	1,8%
criticism	7	4,1%
Total	165	97,6%
does not answer	4	2,4%

The comparison between the topics and the definitions from which they were taken allows us to group them in three dimensions (Tab. 4) which reflect the different perceptions that the students show they have towards the peer feedback process:

1) in the first place, it is considered a social tool that enables dialogue, the comparison of opinions, the circulation of ideas, in fact the topics referring to «exchange» and «comparison» are prevalent (47.9%) and students speak about them as *a moment of sharing ideas to improve and modify a piece of work, expressing criticisms in a constructive way[1]*.

2) There is also the idea of dealing with a tool for the evaluation and critical review of one's own artefacts: the items «review», «evaluation», «criticism», «knowledge» (42.4%) and the answers in which they are contextualised give an account of a way of activating feedback that has relevance in areas such as the evaluation and restructuring of knowledge, generally reserved for the professor's intervention. Therefore, the students do not think that peer feedback is a less authoritative or less useful tool than the Professor's feedback, but they recognise its own specificity and circularity, which makes it simultaneously evaluative, collaborative and reflective.
   I would define peer feedback as a new form of peer evaluation. Students or colleagues are asked to give an opinion on the work of others in a context

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[1] In Italic the students' answers.

of equality. It serves to develop constructive criticism both towards oneself and towards others, and it is a formative opportunity, since the participants learn from each other. It can be an opportunity for comparison, collaboration and debate.

3) The perception of peer feedback as a metacognitive tool is instead in the minority: 9.7% of students assign it the function of activating reflection. These students talk about peer feedback as a tool that facilitates the mechanism of immersion and distancing from practice, typical of the reflective attitude but also of the self-correcting and transformative value it can have.

Tab. 4 - How the tool of feedback is perceived within the training ecosystem

Social tool		Metacognitive tool	Evaluative and re-structural tool			
exchange	comparison	reflection	review	evaluation	criticism	knowledge
21,8%	26,1%	9,7%	10,3%	26,1%	4,2%	1,8%

Some questions served to go into more detail about the peer feedback process. In fact, we tried to encourage participants to reflect on the benefits of recursive actions of *providing* and *receiving* feedback (Question no. 7). Furthermore, we asked them to express a preference and a reason for that preference, in terms of learning, between the process of providing feedback and that of receiving it. The results, in favour of providing feedback (36.7%), are shown in Tab. 5.

Tab. 5 - Preferences related to the actions of providing and receiving some feedback

	No.	%
receiving	57	33,7%
providing	62	36,7%
both	46	27,2%
does not answer	4	2,4%

In light of this preference, we have tagged the answers to question no. 1, relating to the benefits for one's own learning, deriving from providing feedback.

After leaving out the answers arising from misinterpretation, in which the students understood the benefits in terms of the learning of the other and not in terms of their own learning work, we grouped the tags into 4 main topics, based on their semantic proximity (Tab. 6).

The thematization was carried out after a second cross-check reading, in light of a certain homogeneity emerging from the students' thoughts. Such topics concern the activation of attitudes that the students experienced when they found themselves providing feedback to their peers: 1) transformative rethinking; 2) Professional attitude; 3) change of point of view; 4) scaffolding and mutual trust.

Tab. 6 - Benefits from providing some feedback

Topic	Transformative rethinking	Professional attitude	Change of point of view	Scaffolding and mutual trust
Tag (valid answers)	Self-reflection; Metacognition: Self-assessment; Problematizing: Questioning oneself; Mirroring.	Learn to assess; Analyse; Learning; Learn to design; Objectivity	Comparison; Putting in someone else's shoes; Distancing; Critical sense; Widening one's views.	Enrichment; Cooperation; Mutual trust;
Occurrences	55	28	56	3

The students' perception of the benefits attributed to the action of receiving some feedback is really heterogeneous (Question no. 4). The identified tags are in fact 33 against the 19 related to providing and 167 answers out of 169 are valid, that is they correctly comply with what was asked.

Students seem to have understood that peer feedback is not a judgmental or evaluative intervention, but rather an experience that activates reflection. This reflection does not only involve the strictly cognitive dimensions of one's task, but also aspects related to collaboration, divergence and critical thinking. Reading the tags according to the framework of Fishman and Dede (2016), not only cultural factors, but also intrapersonal and interpersonal factors are relevant in teaching-learning processes. For this, we have tried to group the tags by connecting them to the three factors listed above (see Tab. 7). We can see that students perceive the effectiveness and benefits of peer feedback processes as widely distributed across all three dimensions.

Tab. 7 - Benefits to receive feedback

Competences' dimensions	Cultural/cognitive	Intra-personal	Inter-personal
Tag (valid answers)	Improvement; Objectivity;	Reflection; Other perspective;	Comparison: Friendly suggest;

	Criticism; Valorization: Enrichment; Clarification; Learning; Validate; Assessment.	Awarness; Metacognition; Distancing; Questioning oneself; Accepting criticism; Self-assessment; Re-thinking; Growth.	Friendly judgment; Hints I hadn't thought of; Non-expert eye; Symmetry; Sincerity.
Nr. Occurrences	58	78	31

It is important to note that the intra-personal dimension is the most present. It is possible to hypothesise that students perceive peer feedback as a form of self-awareness literacy and a self-efficacy implementation tool. This connects to what Nicol (2019) claims with respect to the re-conceptualisation of feedback as an internal and internalised process, which peer feedback and peer review methods help to make explicit, conscious and intentionally practiced in learning.

Still in the context of the reflections connected to the activity of providing feedback to peers, it was considered important to investigate whether this moment of reflection and feedback on the work of others could also promote a reflexive return to one's work and possibly on the aspects indicated (Question no. 1).

Almost all of the students, i.e. 96.4% (163) out of the total sample explicitly declare that during the process of developing feedback for peers, they had the opportunity to think about their own design, confirming the reflections that emerged from the recent literature on the topic (McConlogue, 2015; Nicol, 2021; Grion and Serbati, 2019).

In particular, the answers given by the students were analysed to understand in detail which processes and areas of reflection were activated in thinking about their work while they were providing feedback to their peers. The tagging of the answers allowed 4 processes to be highlighted, as shown in Tab. 8.

Tab. 8 - Students perception on learning processes

Processes perceived from students	No.	%
Comparison for self-evaluation and correction	84	51,5%
Reflection on specific aspects of one's work	60	36,8%
Differences between designs	12	7,4%
Analysis of both critical and positive aspects	7	4,3%

There are two main processes that seem to be activated, the comparison between the two works aimed at developing self-evaluation and correction (51.5%), or all those cases in which students explicitly say they have implemented a comparative process between the works and secondly the

reflection on specific aspects of one's own work (36.8%) or all those cases in which the students focus on the elements of reflection that have been activated in relation to their own task.

Thinking about one's work by providing feedback to peers therefore allows the horizon of feedback to be extended to a recursive and cyclical process of openness towards the other and reflective return inward in which, through comparison, reflection on one's own and on other people's work intertwine and generate moments of self-evaluation and correction. Aspects of both tasks are identified on which to reflect, to grasp their potential, to modify the comparative aspects, to correct oneself and improve the work.

While developing feedback for my peers, I automatically gave feedback on the work done with my group as well. If I perceived in the other groups a factor that was not very coherent with the design, I immediately asked myself and my companions if by chance we hadn't made the same mistake. Is this because it is easy to judge and evaluate other people's work, but then we fail to recognise the errors of our own work? So this work has served us above all to go about understanding what the possible errors made by our group also were.

Reflection on providing feedback activates in other cases a more oriented focus on one's own task by activating more internal reflection. In these cases, the aspects that have been the subject of reflection are specified for greater awareness of the work carried out.

For example, in the aspects concerning the subdivision of the activity into the three phases, the organisation of the timing, the clarification of the main aspects concerning the same activity, such as the materials, and the roles of the students.

The students were then asked whether they felt the feedback received from colleagues was useful and especially whether they would change their design based on the reflections that emerged (Question no. 6). In fact, the students were not obliged to make changes to the work carried out, but taking charge of this action suggests a way of activating (*uptake*) on the part of the students with respect to the feedback, which is no longer just a comment to be interpreted, but rather a productive and supportive process of self-regulation and one that empowers them to look towards the future.

Out of 169 students, all declare that it is useful to modify the design based on the feedback received, of these 132 (79%) had already done so or intend to do so immediately; 37 students (21.9%), while explaining the usefulness of the change, do not clarify whether they intend to make it.

This datum bodes well for the development of a more responsible and proactive posture on the part of the students, certainly in relation to the process of feedback and development of the FL (in line with the characteristic of the uptake), but also in relation to a future planning task. In fact, it should be

emphasised that students, in their studies and certainly in their future professional practice, will have many other opportunities to deal with the production of designs. A process of improvement is therefore activated in relation to the present and future task, which can go beyond the university context, progressively developing self-evaluation, self-regulation, learning to formulate increasingly independent judgments on one's own work and that of others.

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6. Conclusions

The data analysed and interpreted allowed us to give an initial answer to the research questions: the students consider feedback to be relevant to their own learning, in terms of awareness and ability to reflect on the processes implemented. Peer feedback, in particular, is considered a generative tool in both the providing and receiving phases, since it activates metacognitive modes and recursive spirals between one's own ideas and those of one's peers, which go on to transform and implement learning.

The two courses offered many occasions to discuss with the Professors and with the peers about the meaning of feedback, occasions for the alignment of the goals, for linking the tasks and the proposed activities, making the bridge connecting them in building knowledge networks emerge. There were moments of both reflection and discussion when we shared the evaluation criteria so as to refine the skills of formulating evaluative judgements but also to outline strategies and actions to use the feedback positively for the improvement and the self-regulation.

It is important for the students to see feedback as a resource for their learning, which by recalling the studies by Sutton on the epistemological dimension of FL (2012) supports them in understanding how comprehension develops (that is a *feedback on knowing*) but also and most of all in how to

develop and further improve their abilities and knowledge (that is a *feedback for knowing*).

This is realised in an ecosystemic dimension of learning, welcoming different perspectives and it develops in a life-long logic.

Setting the learning ecosystem assumes therefore also the design of multiple feedback and peer feedback occasions, using different tools and making feedback the pivotal and transformative element of the ecosystem itself.

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