KWL, A POSSIBLE MODEL TO CONNECT SELFASSESSMENT AND FEEDBACK: THE STUDENTS' VIEW

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Abstract.
Assessment in higher education can have two functions: providing credentials or improving learning (Boud et al., 1999). As far as the latter purpose is concerned, self-assessment is seen as one of the key elements of formative assessment since its use enhances learning and achievement (Harris & Brown, 2013). Despite of this, Panadero and colleagues (2014) affirmed that "the Spanish higher education context does not have clear guidelines about what type of assessment should be implemented" (p. 371), so that Spanish university students are evaluated through traditional approaches, mostly exams and written work (Ion & Cano, 2011). Instead, using participative assessment strategies such as self-assessment improves students' understanding of feedback (Sadler, 2010), an important factor that helps students to monitor their work as well as to regulate their learning (Nicol, 2010). Self-regulation of learning requires the exercise of meta-cognitive functioning where students monitor and evaluate their performances and generate feedback (Zimmerman, 2008). Using a mixed method, the present study explores how university students report making use of self-assessment and feedback. The subjects are 309 students enrolled in both Philosophy and Educational Sciences, at the Universidad Autónoma of Madrid. Starting from their opinions, the research has experimented the use of a metacognitive model, the Know-Want-Learn method, originally designed by Ogle in 1986, to verify if it could be useful for students to better self-assess themselves, using feedback and more active participation. Although the sample is not representative of the higher education population, it is large enough to allow reasonable reflections.

Keywords: Self-assessment; higher education students, Spain, KWL model, metacognition

1. Introduction

As the education system in the last century changed, higher education objectives focused on training and learning. In this perspective, a greater emphasis on assessment *for* learning, rather than an assessment *of* learning, was required to achieve a holistic sense of learning with the need to change the method of assessment. Assessment in higher education can have two functions: providing credentials or improving learning (Boud et al., 1999). As far as the latter purpose is concerned, self-assessment is seen as one of the key elements of formative assessment since its use enhances learning and achievement (Harris & Brown, 2013). An important consequence of its use is that it increases self-regulation of learning (Ramdass & Zimmerman, 2008), requiring the exercise of meta-cognitive functioning: students monitor and

evaluate their performance, and generate feedback (Zimmerman, 2008). A key argument is that "students are already assessing their work and generating their feedback and that higher education should build on this ability" (Nicol & Macfarlane-Dick, 2006, p.199). This article positions the students at the center of the entire learning process, responsible for their learning and more autonomous. Although the first axiom of the evaluation states that it is impossible not to evaluate, this does not mean that everything has to be evaluated. Only the evaluative balance guarantees autonomous learning processes, providing metacognitive stages for the refinement of self-awareness. Awareness is the first capacity for self-assessment: students learn when they are aware of what they have learned, why they have learned it, and how they need it (Tessaro, 2004). In doing this, students generate internal feedback as they are monitoring their engagement with learning activities, with tasks, and with goals (Nicol & Macfarlane-Dick, 2006). Although research reveals the connection between self-assessment and feedback (see Taras, 2003; Nicol & Macfarlane-Dick, 2006), "how to enhance students' feedback in support of self-regulation has not been fully explored in the current literature" (Nicol & MacfarlaneDick, 2006, p. 199).

This paper wants to address the connection between self-assessment and feedback by proposing the use of a metacognitive model called KWL, originally designed by Ogle in 1986, which focuses on self-regulated learning and feedback.

2. Self-assessment: main key points

There seemed to be confusing notions on what is known as self-assessment and on the practices associated (Kelvin, 2012). To delete these tensions, five elements have been underlined and considered as key points for this paragraph.

The first one is about the definition of SA, considered in this study as "the qualitative assessment of the learning process, and its final product, realized by pre-established criteria" (Panadero, 2011, p. 78). What is emphasized here is precisely the fact that SA does not focus on the score as providing credentials, but on the understanding of the students' process as an improvement of learning.

The second key point is connected to the two theoretical approaches that refer to SA. In the first one, SA is seen as an instructional process used by the teacher and considered as part of formative assessment (Black & Wiliam, 1998). In the second, SA is understood as a process in the students' hands in which they self-regulate their learning (Panadero & Alonso-Tapia, 2013). As far as the latest approach is here considered, SA is seen as an assessment that guides students to improve self-regulation, inside their learning processes.

The third key element is summarized in the question „why is SA useful into learning processes?", As it requires effort from students (Panadero & Alonso-Tapia, 2013). There are different reasons to consider SA important, and they all seem to be connected with the others: 1) it contributes to increased self-regulated learning (Ramdass & Zimmerman, 2008), so that 2) it increases students' involvement in their learning (Boud & Falchikov, 2005), and 3) grows their motivation: students who believe that they can complete a task are more motivated and

engaged in the task (Panadero & Alonso-Tapia, 2013). This 4) makes students aware of which metacognitive strategies to use, and when (McMillan & Hearn, 2008). In this way, 5) SA leads to a career as a lifelong learner (Boud, 2013).

The fourth key element is connected to when SA occurs. Although there are different theories about this, the present research is in accordance with Panadero and Alonso-Tapia's work (2013), in which the authors stated that SSA occurs in all the phases described in Zimmerman and Moylan (2009) model: in the planning phase students can plan their actions strategically, in the execution phase students should realize that what they are doing is not correct and decide to modify the way to proceed; and in the self-reflection phase they can see the whole learning process.

The last key element is related to the conditions that favor SA acquisition. Goodrich (1996) listed some necessary conditions that favor SA and distinguished them into conditions in the strict sense, as 1) awareness of the value of self-assessment, 2) access to clear criteria on which to base the assessment, 3) specific task or performance to assess; and instructional aids, as 4) follow models of self-assessment, 5) have direct instruction and assistance, 6) to get cues regarding when it is appropriate to self-assess, 7) to practice, 8) to get opportunities to revise and improve the task. If the first ones do not occur, they obstruct SA. These pedagogic aspects influence the presence or absence of SA and how students do it (Panadero & Alonso-Tapia, 2013).

3. Feedback: main key points

A central argument is that, in higher education, feedback should be used to empower students as self-regulated learners (Nicol & Macfarlane-Dick, 2006). While there is a growing body of literature surrounding feedback, there continues to be little consensus on what works and why (Henderson et al., 2018). To clarify this, three key points have been identified.

The first one is connected to the definition. The traditional definition of feedback that supports this study was stated by Ramaprasad in 1983: "Feedback is the information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way" (p. 4). The author underlined three main points from his definition: 1) the focus of feedback may be any system parameter: input, process, or output, 2) the necessary conditions are data on the reference level of the parameter, data on the actual level of the parameter, and a mechanism for comparing the two, 3) the information on the gap between the actual level and the reference level is feedback only when it is used to alter the gap.

The second key point is connected to the literature about feedback's role that, in recent years, moved beyond merely providing students with information about their work to involve them as active agents (Boud and Molloy, 2013). In this perspective, a new way of thinking is needed when terms like "student-centered learning" have entered the lexicon of higher education (Nicol & Macfarlane-Dick, 2006).

The third point is related to feedback, still largely controlled by and seen as the teacher's responsibility in the University context (Nicol & Macfarlane-Dick, 2006). But this transmission

brings several problems: if it is exclusively in the hands of teachers, "then it is difficult to see how students can become empowered and develop the self-regulation skills" (Boud, 2000). Furthermore, students need to decode and translate into action the feedback they receive, so that students require opportunities to construct an understanding of them (Higgins et al., 2001) actively. But, if student numbers and class sizes become larger, it becomes increasingly timeconsuming for lectures (Boud & Molloy, 2013).

4. Self-assessment and feedback

From the previous paragraphs, it was possible to understand the importance of selfassessment and the role of feedback. How is SA connected to feedback? There is a big part of the literature on feedback, which emphasizes its centrality for the student (Taras, 2003). Black and William (1998) established the necessity for relevant feedback for efficient learning unequivocally. But, traditionally, SA didn't include feedback, either from tutor or peers, as an integral part of the process (Taras, 1999). In her approach, she emphasized the importance of systematic tutor feedback within SA and claimed that this form of self-assessment would be beneficial to students and help not only with the learning process but also with the understanding and assimilation of assessment procedures and protocols. In this perspective, peer-assessment is linked to SA, in which students help each other through their feedback and make judgments about their work and the work of others using pre-determined criteria of quality. The use and study of formative assessment and self or peer-assessment have a strong history with a grown body of literature that nowadays highlights the benefits of their uses. As already in 1999 Dochy and colleagues showed, student-student interaction increases 1) student confidence in their ability to perform; 2) awareness of the quality of the student's work; 3) student performance on assessments and quality of the learning output; 4) student responsibility for their learning and independence; 5) student satisfaction with assessment and feedback.

It is here fundamental to remind that the move to more student-centered learning, and teaching, want students being more responsible for assessment rather than receiving an assessment from only the course instructor. Furthermore, with the focus on life-long learning, the ability of students to be able to evaluate and improve their work has become more valued in a globalized society and economy (Boud and Falchikov, 2007). "A key argument is that students are already assessing their work and generating their feedback and that higher education should build on this ability" (Nicol & Macfarlane-Dick, 2006).

5. KWL model: the possible key

Although there is strong evidence in the literature that self and peer-assessment can enhance students, the literature also highlights that their implementation is not easy and remains at "the margins of assessment practices in higher education" (Wanner & Palmer, 2018, p. 1033).

The Know-Want-Learn (KWL) is the model that was used in this research as suitable with the key points connected to SA and feedback. Originally designed by Ogle in 1986 as a tool to facilitate active reading in expository text, the KWL method has been used differently: as an informal assessment tool (McAllister, 1994), as a learning strategy in women's studies (Robinson, 1996), as a metacognitive approach for self-assessment in higher education (Mok et al., 2006). From their point of view, student's prior knowledge and their motivation are key elements as they have both direct and indirect effects on learning outcomes, and what has been learning in the previous step becomes the prior knowledge in the successive one. In conclusion, they stated that the KWL model is both useful feedback for the learner and a valuable selfassessment tool for teachers in higher education.

Concentrating on its use connected to metacognition, another important factor affecting learning (American Psychological Association, 1997), much has been reported on its usefulness as a feedback tool for the learner. The letters in the name stand for the process of making meaning that begins with what students know (prior knowledge), moves to the articulation of questions of what they want to know (motivation to learn), and continues as students record what they learn (outcomes of learning). Focusing on the connection between SA and feedback, the heart of this study, through the model, students are guided to a SA process, in which they explicitly think about their prior knowledge, their learning goals, and their learning outcomes. By engaging on this process, the learners' thinking is made conscious and explicit, their awareness heightened, and their learning actions deliberate. Consequently, the learners are metacognitive about their learning through systematic self-assessment using the Know-WantLearn method. Summaring, in this study the KWL model has been used as a tool to facilitate students' self-assessment and metacognition, in which students were guided to explicitly think about their prior knowledge, their learning goals, and the learning outcomes. In this way, they were metacognitive about their learning through systematic self-assessment using the KnowWant-Learn method.

6. The research

As seen from the previous paragraphs, this research reports a study on self-assessment practices, focusing on feedback and the improvement of students' skills. To do so, the KWL model was used. From the literature emerged that it has been used with broad purposes, including as a metacognitive approach for self-assessment in higher education. What is new in this research is that the focus is not on the teacher, but on the student. Based on the presented theoretical framework, the study intended to answer the following questions:

*RQ*1) Do students think that self-assessment is important for their learning processes?

*RQ*2) Which role does feedback play in students' learning processes? *RQ*3)

Did the proposed activities bring benefits to students' learning?

Through these research questions, the study wanted to:

1) Verify if students consider self-assessment an important moment inside their learning process and develop students' capacity for self-assessment. As self-assessment requires effort from students, they need to be aware of its usefulness. Be aware that selfassessment is a crucial ability for learning is the first condition, in the strict sense, described by Panadero and Alonso-Tapia (2013, p. 564).

2) Unpack the process of self-assessment into feedback to prove if and how students generate and receive feedback. Students that are more self-regulated learners produce better feedback or are more able to use it to achieve their goals (Butler & Winne, 1995).

3) Propose a classroom's activity that reflected on students' self-assessment (SA) practices, using the Know-Want-Learn to verify its usefulness to develop students' capacity for SA and feedback.

6.1 The context

This work positions the research in the Spanish context. Spain, although it joined the Bologna Plan in 1999, shows low attention on the assessment moment (Grion & Pagani, 2017). The 1990 Reform Act promoted new methodological approaches, oriented towards formative assessment purposes (Remesal, 2007; 2011), but "Spanish higher education context does not have clear guidelines about what type of assessment should be implemented" (Panadero, 2011, p.10). There is a lack of formative approach in Spanish learning assessment as Spanish university teachers do not have compulsory specific training on pedagogical aspects and they use traditional approaches to assessment (Ion and Cano, 2011). Decisions about assessment practices rely on either the individual teachers or group of teachers lecturing on the same course. According to the Spanish Ministry of Science and Innovation, Garmendia (2016), Spanish universities are still facing serious problems. One of the reasons for this is the lack of methodologies focused on student learning.

6.2 Subjects and methodology

The research took part in the University Autonoma of Madrid (UAM), through a mixed method.

To reach the first aim, a 5 Likert-points questionnaire was used. After an initial pilot phase, the final version has been distributed both in online and paper version, in February and March 2018. They all were contacted directly by the researcher, thanks to a collaboration with the Directors of the Departments and the availability of some professors who gave their availability to work directly in class. The questionnaire has been administered to 309 students: 158 enrolled in Philosophy, 151 in Education, both masculine and feminine (average age: 21 years old). All students voluntarily accepted to participate in the research and gave their consent for the use of the data. Data was analyzed for the response, average, and deviation. The reliability of the questionnaire was verified through the alpha of Cronbach test. The questionnaire was split into four parts, of which the first related to personal data. Only the questions in the second section were considered. Specifically, students answered to these items: *i*1) I think that self-assessment is fundamental in my learning processes.

*i*2) I self-assess at the beginning of the course *i*3) I self-assess during the course *i*4) I self-assess at the end of the course

To reach the second aim, the questions in the third part were considered. Specifically, the items were: *i*5) My professors give me feedback *i*6) My peers give me feedback *i*7) I give feedback to my peers *i*8) I create my own feedback by:

a. Fixing the goals to achieve
b. Analyzing my mistakes
c. Reflecting on the feedback received
d. Using different methodologies
e. Reflecting on the contents
f. Self-assessing

To reach the third aim and give answers to the third RQ, a KWL model's worksheet was created and built. All the subjects were enrolled at Italian courses (A1-A2 and B1-B2) at the Universidad Autónoma de Madrid (UAM), a service that offers languages courses at all the students. The worksheet has been administered in 4 classes, through the availability of the professor. The intent was to involve students actively, first by making real the connection between their prior knowledge and their motivation to learn, then by reflecting on the feedback and on the new information they got. As the students participating in this part of the research were belonging to different courses of study, was proposed an example-topic linked to an object of common use and known by everyone: "the smartphone." Students were divided into two groups: one experimental (GS. n= 23) and one not (GnS. n= 25). The division into the two groups was done randomly, dividing the students in equal numbers. The works were conducted in March 2018. Both the groups firstly filled up the two parts of the table, in which it was asked to define what they knew about the smartphone, and what they would like to know about it. After the compilation, the work focused on feedback and new information. In the "discussion moment," GnS students got some information about the smartphone, from the researcher. GS students didn't get any information from the researcher, but they got peer-feedback as they worked with their classmates, divided into small groups. The discussion lasted about 20 minutes. Then, students filled up the last column of the table in which was asked them to define if they learned something new about the smartphone, indicating what they had learnt. In the end, both the groups answered to 5 closed questions, related to usefulness, or not, of the worksheet. The whole activities lasted almost 2 hours. The professor assisted to all the activity, passively, and in the end, he took part in a questionnaire with the same questions that were presented to the students. The KWL worksheets were analyzed firstly through an analytic reading, then using an adapted version of Biggs and Collis's SOLO taxonomy (1982), with the following levels of learning:

- Extended Structural (E): ability to use knowledge and to design a research process in new and extended contexts of study.

- Multistructural (M): ability to use knowledge and to design a research process in their context of study.
- Unistructural (U): ability to apply knowledge by adapting diagrams and procedures learned in the design.
- Prestructural (P): ability to apply knowledge by reproducing structured and coding procedures.

Data were collected between February and March 2019.

6.3 Results and discussion

6.3.1 Do students think SA is a fundamental moment for their learning processes?

The quantitative analysis about the first RQ, through the first item, shows that students selfassess themselves because they consider it an important moment in their learning processes. They affirmed to self-assess. Furthermore, their SA practices are mostly practiced at the end of the course, before the exam. Rarely students self-assess at the beginning of the course or during it.

At the light of data concerning the first aim, it is possible to do some reflections. The first is connected to the conditions that Goodrich, already in 1996, reported as necessary for selfassessment. The first one was "awareness of the value of self-assessment." Only if students are aware of the usefulness of SA, they will SA. This happens because it requires effort from them. For this reason, it is fundamental that students consider SA a crucial ability for, and in, their learning process. The second consideration is related to Nicol and Macfarlane-Dick (2006) words, when they affirmed that students are already assessing their work, as the data on here affirmed. The third reflection concerns when students self-assess. There are different theories about where to put self-assessment inside the learning process: the fact that SA can occur during the learning process has pedagogical implications and must not be limited to exclusively assessing in the end, but also during the entire process (Panadero & Alonso-Tapia, 2013).

6.3.2 Which role does feedback play in students' learning processes?

From the quantitative data related to the second RQ, 82.5 % of students affirmed to receive feedback from teachers, 70% to receive feedback from peers, 83% to give feedback to their peers, 78,5% to create their own feedback. By reporting the media of the answers, they affirmed to create their own feedback by: fixing the goals to achieve (4,51), analyzing the mistakes (4,57), reflecting on the feedback received (4,58), using different methodologies (4,21), and reflecting on the contents (3,92), self-assessing (4,12). Specifically, for the last point of selfassessment, students affirmed to do additional exercises (38%), generate more questions about the topic (24%), look for the answers in the texts (22%), use rubrics (16%).

In light of the data collected, related to the second aim of this research, it is possible to report some reflections. Firstly, the way students affirmed to check their contents' understanding is

different. As instructional aids used to promote SA providing the conditions stated by Goodrich (1996), the use of rubrics is promoted by the literature. A rubric is an assessment and scoring tool that contains the assessment criteria, consisting of three parts: the assessment criteria, a scale for self-grading, and a short description of the quality level standards. Its use is growing in Europe (Panadero & Alonso-Tapia, 2013) because its the transparency provided may facilitate other AfL related processes, such as interpreting and using feedback or assessing the performance of peers (Panadero and Jonsson, 2013). As rubrics was one of the affirmed tool used by the student to self-assess, further research should focus on the reason why this happened. Secondly, students generate and receive feedback. This confirms Nicol and Macfarlane-Dick words (2006) in which they affirmed that students generate their feedback. This enhances the centrality of the students, stimulating the ability to process independent critical judgment, free from teachers‘ judgments. Furthermore, students can connect their feedback with their peers, with the possibility to have multiple perspectives. Automatically students reflect on the feedback they received from others, mostly peers, reinforcing their knowledge, learning different ways of performing the same task, accruing a self-evaluative capacity (Nicol, 2010).

6.3.3 Did the proposed activities bring benefits to students' learning?

KWL model’s worksheet proved to be an interesting tool of connection between selfassessment and feedback. In the first part of the activity, the students of both groups had to report their knowledge on the topic and indicate what they wanted to know about. There were no particular differences between what the students of the two groups knew and what they wanted to know about the smartphone. Most of them indicated that they knew what a smartphone is, indicating it as a daily technological tool, used for different purposes. In both groups, the students were interested in knowing detailed elements such as the types of possible applications, technical elements such as the smartphone's internal functioning, historical elements such as those who invented the smartphone, reflective elements as asking how everyday life would be without the use of smartphone". The feedback moment was the most important as the groups worked differently. This brought a visible differentiation between the two groups. From the analysis, was possible to verify that the feedback that GnS got from the researcher reached to a relational level in which students got several aspects of the topic with a higher sign of integration with other concepts. Students were able to apply their knowledge by reproducing structures and by adapting diagrams and procedures. Peer-feedback in GS activity allowed students to reach several aspects of the topic, too, but with an extension of the learned concept to a new area, moving to the extended structural level showing a growing ability to use knowledge and to design a research process in new and extended contexts of study. For example, in the GnS group, one information was that “today there are mobile phones that work on two, three or four frequencies.” The discussion leads to the radio bands that a phone can support. Through this discussion, most of the students from the GnS has realized that the more radio bands can support a phone, the more frequency it can use. This was possible because they connected the first smartphone with the new technology that allowed the most advanced phones to work on all frequencies. GS students showed a growing knowledge, connected with other domains, as social and online payment. They have not only reflected on the fact that now

smartphones have more frequencies, and therefore have evolved, but have reflected on the contexts in which these developments have been implemented. As the focus in this part of the activity was to verify if, through the use of KWL worksheet, feedback was useful to better support student's learning, the analysis did not focus on the evidence of students making progression in their learning, but on how students used the feedback to progress in their learning. Clearly, the analysis was fundamental to certify students progressions, but the topic (smartphone) did not require scientific and precise knowledge, as it does in a real course of study. Most students (n = 38, or 79%) stated that the KWL model could be a useful tool to use to self-assess.

At the light of this, it is possible to say that the first implementation of the KWL model was useful to see that feedback bring students a higher ability to improve their extension with other concepts and domains, a crucial ability for life-long-learner.

7 Conclusion

This study aimed to explore how university students report making use of SA and feedback. To do so, the research was splatted in three parts, connected to the three research questions. The first part wanted to verify if students consider SA an important moment inside their learning process. As already in 1996 Goodrich reported, the awareness of the value of selfassessment is a necessary condition in learning processes. Students consider SA a crucial ability for, and in, their learning process. Important is to teach them to self-assess correctly and during the entire process. The second part aimed to unpack the process of SA into feedback to prove how feedback is generated. Students have different ways to self-assess. Rubrics were affirmed to be a tool used by students to self-assess, even if with the lower percentage. Further research should focus more on deep about the reasons, as its use is growing in Europe (Panadero & Alonso-Tapia, 2013). The third part examined the implications for assessment practice with the use of feedback, through KWL model. Although researcher's feedback allowed students to reach several aspects of the topic with higher emerging signs of integration of the aspects learned into a coherent concept or theme, peer Feedback gave students an extension of the learned concept or theme to a new area or domain. An opportunity to increase the impact of feedback by enhancing the role of students in the SA process is to build feedback opportunities between peers, by activating peer review processes. Further implementation should focus on a real case of study, inside a university course. From the progression of this research, this implementation took place in the course of Evaluation and Qualitative Research at the University Cà Foscari of Venice, to maximize the learners' awareness of their prior knowledge and knowledge construction process. In this perspective, online platforms were used as students could digitally be engaged in formative assessment and gained insight into their comprehension. In doing so, it could become a valuable self-assessment tool for teachers, too.

In conclusion, this study shows that SA and feedback are strictly connected. It is important that students understand that feedback is an evaluation of the performance in a precise context. "This holds whether the feedback derives from an external source or is generated through self-assessment" (Nicol & Macfarlane-Dick, 2006, p. 212). Starting from this point, emerged that KWL model is a valuable method that connects SA and feedback in a cyclical

process: students have their prior knowledge that needs to be considered, as their motivation to learn. Through collaborative activities, students can face different perspectives and reflect on their learning process. In this process, they also reach to new knowledge. What is learned (L) previously become the prior Knowledge (K) of the successive. In this way, learning is not fragmentary but linear, changing the students' knowledge structure. Teachers could also benefit from this model in the alignment of teaching.

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