ENHANCING ONLINE SELF-ASSESSMENT OF COLLABORATIVE WORK THROUGH COCREATING RUBRICS

Tami Seifert, Kibbutzim College of Education

ABSTRACT

Online teaching is an inseparable part of the education system and necessitates the development of educators' abilities to integrate knowledge on assessment and techno-pedagogic knowledge to enable the intelligent use of basic online assessment methods. This study considers how the cocreation of a teamwork rubric to assess the production of a learning unit designed by students in groups contributed to the online self-assessment of collaborative work processes from the perspective of student-teachers. Cocreation of a rubric was combined with graded self-assessments to stimulate students' increased responsibility for the learning process. I employed a mixed-methods methodology for the research, including both qualitative and quantitative data collection and analysis to investigate students' attitudes concerning the contribution of their cocreation of rubrics to the improvement of their assignments and their assessment skills. The sample included 120 student-teachers at the graduate level. The results clarify the contribution of cocreating rubrics to student-teachers' online assessment of collaborative work processes and reveal their attitudes concerning the use of collaborative processes in their teaching. Creating a positive learning experience for the student-teachers can train and encourage them to employ alternative assessment methods in their teaching.

Keywords: *cocreating rubric, self-assessment, online assessment, rubric, anonymous assessment, alternative assessment*

INTRODUCTION

Assessment is a fundamental aspect of student learning instruction, and many challenges and problems exist in assessing students due to the online learning environment (Rahman et al., 2022; Seifert, 2022). In online learning, the use of rubrics to guide students' activity can be effective in specifying target performance criteria for assignments when they are designed carefully (Lauricella, 2022). Online self-assessment is an effective self-regulatory learning approach in various disciplines and learning contexts (Yang et al., 2022). Students tend to consider self-assessment beneficial to obtain more information about the evaluation process and to improve their work (Iglesias Pérez et al., 2022; Seifert & Feliks, 2019). The proposed study explores how the cocreation of a rubric contributed to the online self-assessment of collaborative work processes from the perspective of student-teachers (hereafter "students"). Rubrics are guidelines that enable the assessment of "communicating expectations; providing focused ongoing feedback; and grading" (Andrade & Du, 2005; Holmes & Smith, 2003; Isaacs, 2001; Moskal & Leydens, 2019).

Modern learning management systems offer a built-in online rubric option that can be used by lecturers and students for the assessment process (Alaidi et al., 2020). Technology-enhanced assessment enables in-depth, unobtrusive documentation of the many layers and dynamics of

authentic performance and allows greater flexibility and dynamic interactions in and between the design features (Gibson et al., 2018; Seifert & Feliks, 2019). Alternative assessment methods help students learn about and practice assessment processes and develop their skills for assessment and learning (Bacchus et al., 2020; Chinn, 2005; DiGiovanni & Nagaswami, 2001). Self-assessment is an essential skill for teachers. Higher education is continually in a dynamic state of change, and the integration of online learning into it and the trend of teaching large classes continually increase. Exploring the students' perspectives on the usefulness of cocreating a rubric to the online self-assessment of their collaborative work processes can encourage students to understand how assessment is conducted and develop the learner's assessment skills (Chinn, 2005; DiGiovanni & Nagaswami, 2001; Seifert & Feliks, 2019). Having the students cocreate the rubric to be implemented for the assessment process may improve self-regulated learning, self-efficacy, and performance (Panadero & Jonsson, 2013). Furthermore, it can enhance assessment skills (Fu et al., 2019; Mertler, 2009), enable calibration of the rubric to enhance reliability (Derwin, 2022a), add another layer of expertise and professional development to the students' toolbox, and broaden their skills to apply assessment methods with their own students (Seifert & Feliks, 2019; Seifert, 2020; Seifert, 2022).

Indeed, one of the possibilities for improving the implementation of self-assessment is involving students in the design of rubrics (Fu et al., 2019). Teachers are often assisted in their grading of their students' work by rubrics, but such rubrics can also serve a more important role in students' self-regulation and performance (Fraile et al., 2017). The design and use of rubrics by students, as part of a student-centered formative approach to assessing their works, enable students to learn about rubrics as part of their learning of evaluation skills (Arter & McTighe, 2001; Stiggins, 2001). Rubrics can help students understand the goals for their learning and establish quality standards for a particular assignment. Using this method, students can also learn how to make reliable judgments about their own work that can inform their revision of and future improvement in their products. Moreover, cocreating rubrics with their peers enables students to decide on the goals, quality, and requirements of the assignment before completing the assignment, and may result in students' more positive responses to those assignments (Reddy & Andrade, 2010). For these reasons, scholars have indicated the instructional value of rubrics and urge instructors to use them not just as assessment tools but also as instructional guides (Andrade 2000; Osana & Seymour, 2004; Song, 2006; Tierney & Simon, 2004).

ASSESSMENT QUALITY

Self-assessment means involving students in the processes of determining what is good work in a given situation (Boud, 2013). Student assessments are not necessarily less effective than lecturers' assessments, even though students have found that they were similarly reliable (Magin, 2001). Implementing cocreated rubrics for assessment may enable students to obtain more information and feedback on their work according to their suggested and discussed criteria. It also facilitates their understanding of which criteria should be used for assessment, and they learn about the assessment process, how to adapt assessment methods to attain teaching goals, and how to discover the strengths and weaknesses of their work. This experience reinforces their understanding of their discipline and helps them to improve future performances (Ballantyne et al., 2002).

Other studies have shown that although there is a strong correlation between peer and lecturer assessments (L'hadi et al., 2009; Morton & Macbeth, 1977; Orpen, 1982), this correlation does not appear in a comparison between lecturer assessments and students' self-assessments. This may be explained by students' over-criticism of their own performances (Morton & Macbeth, 1977) or by students' competence in the assessment process (Tajima et al., 2022). Alternatively, weaker students may overestimate, and stronger students may underestimate, their own performances (Lejk & Wyvill, 2001). Enabling students to cocreate the rubric may add to the accuracy of their assessment.

TECHNOLOGY ASSISTED ASSESSMENT

Technology enhanced assessment enables in-depth, unobtrusive documentation or "quiet assessment" of the many layers and dynamics of authentic performance (Gibson et al., 2018). Technological means should be used for assessments in a focused manner to allow the technology to support the assessment process, produce digital

feedback, enhance students' ability to regulate their performance, and improve the assessment's efficiency and effectiveness (Nicol & Milligan, 2006). Although self-assessment can save time for the teacher that they would otherwise invest in assessing assignments, teachers need time to organize and manage the assessment process. Assimilating technology in the assessment process can resolve factors that hinder the implementation of self-assessment. According to Lin et al. (2001), internet-assisted assessment systems, such as online peer-assessment and autograding, facilitate anonymity, and the assessment is performed without much time investment by the teacher in encoding information. Using technology allows evaluation to be performed at any time and in any place and enables the lecturer to follow students' progress all the time. A further advantage is that online assessment saves paper and the time necessary for printing noncomputerized examinations. Moreover, online assessment systems reduce the limitations for assessment performance in class (Sung et al., 2005). Enabling students to cocreate rubrics online may enhance students' engagement and their ability to give rich feedback (Derwin, 2022a), as well as add a large range of criteria from various perspectives, ways of learning, and points of view.

APPLYING COCREATED RUBRICS FOR THE ASSESSMENT PROCESS

Rubrics add to the learning process by clarifying the learning target and supporting specific students' needs (Derwin, 2022b). In the event that students comprehend what the target is, they are better able to hit it (Stiggins, 2001). Students who plan the criteria for surveying their performance in advance will be better ready to complete the assignment and show their abilities. Rubrics control instructional structure and delivery, and when expectations are precisely explained through the rubric, students can be better ready to maintain their learning focus as they pick instructional methodologies and configure learning situations that empower them to accomplish these goals (Arter & McTigue, 2001). Rubrics make the assessment procedure more exact and fairer, and they can clarify the learning expectations about the different tasks (Andrade & Du, 2005).

By alluding to a typical rubric when exploring student performance, a teacher is bound to be more consistent with their assessment. A rubric helps in the assessment process, since it constantly attracts the teacher's regard for every one of the key criteria, allowing them to adjust the applied criteria from student to student. When students have the assessment criteria on hand when completing the assignment, they are better ready to survey and scrutinize their own performance (Hafner & Hafner, 2003).

While well-planned rubrics have the potential to make the assessment procedure more valid, their value lies in advancing the teaching and learning process, but having a rubric does not really imply that the assessment process is simple. A genuine concern with rubrics is that they are time-consuming, particularly when writing the descriptions of performances in each dimension. Creating rubrics can discourage exploring designs other than those envisioned by the rubric-maker. The challenge is to make a rubric that clarifies what is expected from the learner without constraining it. A rubric creator faces a comparable challenge in designing a rubric that is neither excessively tight nor excessively expansive. While not a perfect solution, the advantages of rubrics are many—they can enhance student learning, support instruction, reinforce assessment, and enhance program quality. The present research seeks to learn about the contribution of cocreating rubrics to students who are in a master's degree course in a college of education and also practicing teachers. The process is meant to model best practices of online assessment and to encourage its implementation with their own pupils.

Given the above background, the present research investigates the following questions:

1. What is the contribution of collaborative cocreation of a rubric to the learning process?
2. What are the attitudes of students who cocreated a rubric concerning its contribution to their mastery of the assessment process?
3. What are the attitudes of students who cocreated rubrics towards the implementation of cocreating a rubric with their pupils?

METHOD

This study used a sequential explanatory mixed-methods design consisting of two distinct phases (Creswell et al., 2003; Tashakkori & Teddlie, 2003),

including both quantitative data collected from a questionnaire and qualitative data gathered from open-ended questions. In this design, the quantitative, numeric data were collected and analyzed first, while the qualitative, text data were collected and analyzed afterwards and used to explain and elaborate on the quantitative results obtained in the first phase. Participant identities were anonymized using numerical identifiers instead of names to ensure confidentiality and protect the privacy of individuals involved. I applied the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) together with Bartlett's test of Sphericity. KMO was used to determine the adequacy of the sample for conducting factor analysis of the questionnaire. Further, I generated a factor correlation matrix, which is equally important, to address the correlations between the independent variables.

Research Participants

The research sample consisted of 120 students and graduates of the master's program in Technology in Education at a teachers' education college in central Israel who collaboratively cocreated an online self-assessment rubric for a collaborative learning activity. The participants were all also practicing teachers who taught different disciplines to different age groups in either mainstream or special education. The master's program instructs the students in a range of pedagogic models and learning strategies in ICT environments, and they are trained in design learning processes to plan, develop, and examine learning methods in technological environments. A large proportion of the program's graduates implemented change processes in the education system using various sophisticated learning technologies. The participants were studying in their first year of two consecutive years in the courses Mobile Learning and Teaching and Learning in Innovative Environments. The sample included 91% females and 9% males. Half of the sample (50%) taught in elementary schools, 48% taught in junior and senior high schools, and 2% were kindergarten teachers. The average age of the participants was 29.3 (SD = 9.4). The students, who were all teachers with various tenure experience, had no experience with the application of cocreating rubrics and most of them had no experience with online assessment prior to these courses.

Instruments

Although online assessment methods are often used in teacher training courses, including cocreating rubrics, they are rarely applied anonymously online due to a lack of expertise, technological knowledge, or assessment knowledge, and due to the time that the process requires for implementation. The process of cocreating a rubric was used to assess the collaborative process of designing a learning activity. As part of the process, students were presented with an example of cocreating a rubric from the American Association of Colleges and Universities (AACU; http://www.aacu.org/value/rubrics/index.cfm) and with the task of designing one. In the case of the AACU's teamwork rubric the standards of performance are (a) contributes to team meetings, (b) facilitates the contributions of team members, (c) contributes outside of team meetings, (d) fosters constructive team climate, and (e) responds to conflict. For each of these standards, descriptions of the relevant behavior are provided for four levels of performance, allowing a student's teamwork skills to be rated relatively low on one dimension but markedly higher on another. The AACU teamwork rubric was adapted to serve as a guide for the students so they could rate their teammates on their performance.

The task required producing a learning unit that embeds digital tools, promotes pedagogical goals, and enable diverse, effective forms of teaching and learning. The task was based on the content learned during the semester and was performed in teams. After reading the task's details, each student individually submitted their suggested criteria for the rubric creation as part of an assignment. Then, they were divided into groups of 3–4 students, where they discussed the criteria and decided on the most important criterion. Then, they uploaded the suggested criteria to Tricider—a decision-making online tool that allows users to write an idea and then let other participants collaborate by adding to it, giving instant feedback, adding pros and cons, and, finally, making all of these part of the suggested rubric. All the participants were familiar with Tricider (https://www.tricider.com/). The students cocreated the rubric, rated the criteria, and conducted an open discussion to design the final rubric to be used for the self-assessment. The lecturer combined categories, rearranged them, and

designed the final rubric and posted it as part of the assigned task. The questionnaire was distributed to the students after they designed the rubric and performed the assessments. The questionnaires were built on a 5-point Likert scale based on relevant literature (5 = *Strongly Agree*, 4 = *Agree*, 3 = *Neutral*, 2 = *Disagree*, 1 = *Strongly Disagree*). Two experts on assessment provided their input on the questionnaires before distribution.

Principal Axis Factoring

The values for the data according to Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test are presented in Table 1.

Table 1.
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.60
Bartlett's Test of Sphericity	Approx. Chi-Square	3704.129
	Df	231
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) amounts to 0.60, while the recommended value is 0.6. (Kaiser, 1970, p. 197). The value of the Bartlett's Test of Sphericity (Bartlett, 1954) is significant (Sig value is lower than 0.05) indicating that the set of analyzed data was adequate and/or the factor analysis was justified. The highest loading items were selected and are shown in Tables 3–5 in the Appendix. I applied Principal Axis Factoring (PAF) to the data from the questionnaire. Initial eigenvalues indicated that the four factors explained 47.9%, 10.9%, 8.4%, and 7.3% of the variance, respectively. The four factors together accounted for 74.5% of the variance.

For the rubric creation exploratory factoring procedure, I used Principal Axis Factoring (PAF) method, which, irrespective of the high correlations across the survey items, enabled a convergence. PAF allowed nonnormal distribution among the factor items. However, I used Promax rotation, which is a nonorthogonal rotation that allows correlation between extracted factors. The first factor consisted of eleven survey items (alpha = .96), the second factor consisted of three items (alpha = .62), the third factor consisted of four items (alpha = .79), and the fourth factor consisted of two items (alpha = .90). I calculated a mean index for each to enable further analyses. I used the eigenvalue-greater-than-one criterion to decide upon the number of factors. The means, the correlations, and the factors are presented in the Appendix.

Qualitative Analysis

I conducted qualitative analysis on the students' comments regarding the various activities assessed through self-assessment and through peer-assessment, students' reflections in the blog accompanying the course, and responses to open-ended questions. On the course blog, students commented on assignments and posted reflections relating to their activities and the process of cocreating a rubric. They also related how the process of cocreating rubrics contributed to their assessment skills. I employed content analysis as an interpretative-subjective qualitative approach to identify central themes (Creswell, 1998). An inter-coding agreement of 100% (Tinsley & Weiss, 1975, 2000) was obtained by two coders who categorized the written units that appeared in the questionnaire responses. I then used these categorizations to calculate the extent of agreement between the coders. Both coders evaluated the same units, and their evaluations were found to be consistent.

Ethical Considerations of the Study

Since the process was included as learning content in the studied courses, I expected to get a high rate of response from students. The research aimed to facilitate the development of models to improve methods for the integration of cocreating rubrics in the self-teaching and learning process prior to the process of self- and peer-assessment. Following the cocreation of the rubric, students performed self- and peer-assessment with the rubric that they designed and had access to through the learning management system, so at all stages they were aware how their work would be assessed. Since the process was performed in an asynchronous manner, students were able to retain their privacy.

The institution's ethics committee gave its approval for the research and the respondents were promised confidentiality and anonymity. A Moodle learning management system was employed, while maintaining the presenters' privacy.

RESULTS

Question 1—What is the Contribution of Collaborative Cocreation of a Rubric to the Learning Process?

In the open-ended questions, students were asked what the aim of cocreating a rubric was. Their various answers are presented in Figure 1.

Figure 1.
The aim of Cocreating a Rubric, in the Students' Opinion (N=120)

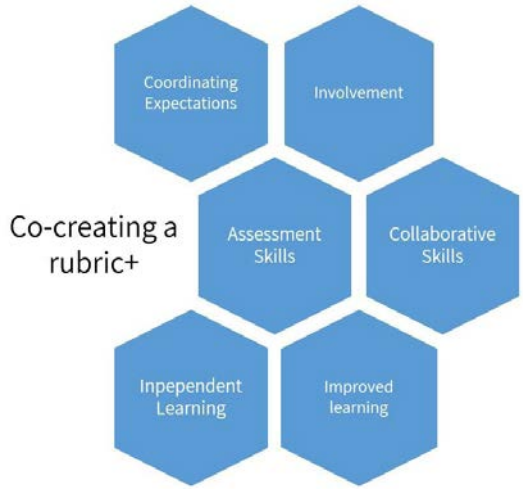


Figure 2.
The Contribution of the Cocreation of the Rubric to the Learning Process (N=120)

As can be seen in Figure 1, students considered the process of cocreating a rubric to be promoting assessment skills, coordinating expectations, improving learning, enhancing collaborative skills, increasing involvement, and promoting independent learning. An analysis of the responses to the questionnaire yielded the results shown in Figure 2, which is that students reported a high level of satisfaction regarding the contribution of cocreating the rubric to the learning process.

As seen in Figure 2, in the students' opinion, cocreating the rubric prior to assessment improved their understanding of the task (M = 4.4, SD = 0.9) allowed them to optimize the time devoted to performing the task (M = 4.0, SD = 1.1), enhanced their motivation (M = 4.4, SD = 0.9), promoted better performance (M = 4.4, SD = 0.9), and helped them to better assess the task (M = 4.5, SD = 0.8). On the contribution of cocreating a rubric to the task completion, the students reported that they used the rubric prior to approaching the task at a high rate (M = 4.0, SD = 1.2). The students reported that the rubric contributed to gaining confidence in completing the task (M = 4.3, SD = 0.8). At the end of the process, the students were asked what they learned from the process of cocreating the rubrics. The students' answers are presented in Table 2.

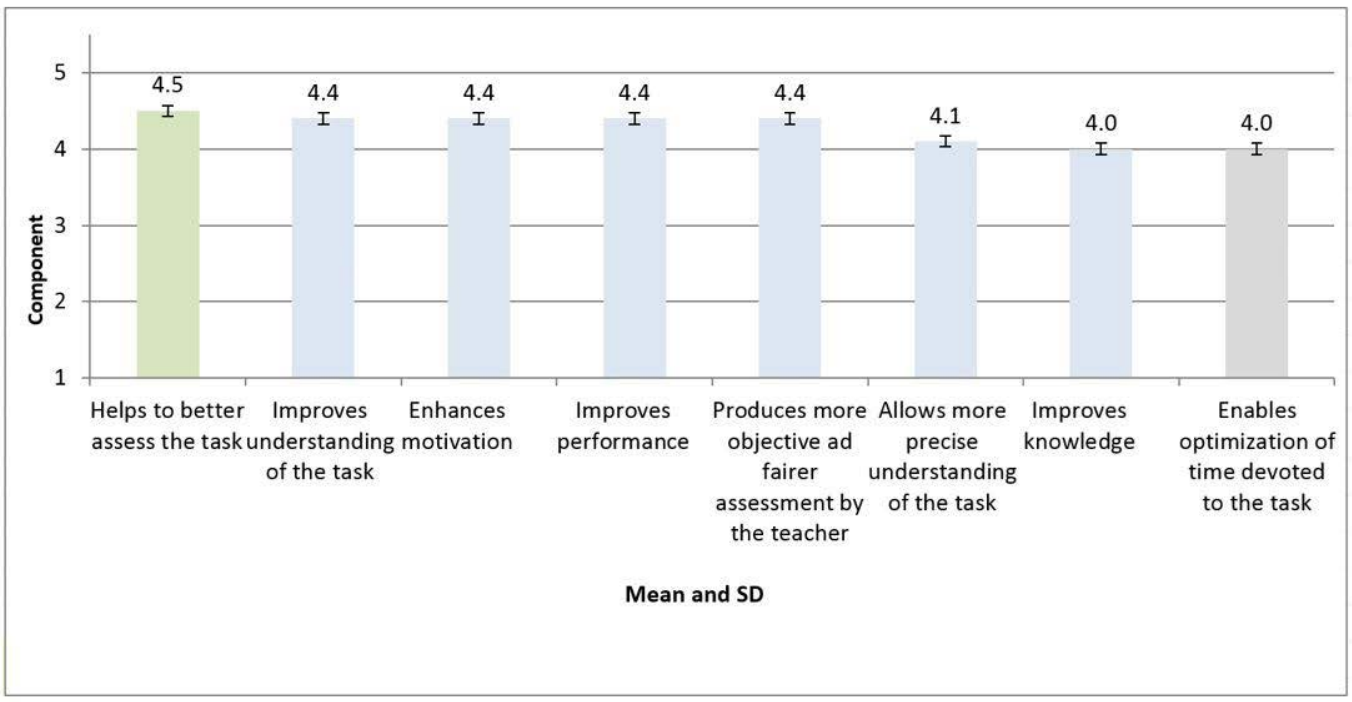


Table 2.
What Students Learned from the Process of Cocreating Rubrics (N=120)

Categories	Subcategories	Examples
Collaboration	To work together To provide a place for others To consider desires of others Managing interaction and discussion Knowing how to compromise Learning from peers Distinguishing level of collaboration Importance of learner's sharing in the creation of the rubric Learning from peers	"When I work together with friends, I learn from them. They suggest criteria that I didn't think about before. And I actually enlarged my knowledge on the subject." [S86] "In order to create criteria for assessment I had to interact, discuss, and cooperate with other students in the group to anchor my learning. It transpires that there was a gap between what I knew and what was needed to create criteria for assessment. Also, it's important to know how to compromise on criteria in the collaborative work to construct the rubric." [S43] "What is important for me is not always important to others and our ways of thinking and seeing the task alters from person to person." [S98]
Accuracy	Paying attention to small details Accurate reading of instructions Meticulousness Aspiring to excellence Setting a high threshold for achievement Focus on important criteria	"... that I notice small details, I understand the importance of each point, it also gives a lot of space for the learner's creativity." [S4] "It's not always possible to create an accurate rubric with our pupils and they need my guidance as their teacher/guide. Nevertheless, with time as the pupils gained experience in creating the rubric, they knew what was required to give their opinion." [S54]
Assessment	To construct evaluation methods Ability to create a rubric Skills are needed Importance of the process in creating the rubric Reduces gaps in knowledge concerning the use of a rubric Assessment of the work in a collaborative manner The importance of noticing the process and not just the final product Awareness of criteria Strict but also supportive Difficulty in self-assessment	"While thinking about criteria for assessment, I devoted thought to the criteria, I divided them according to difference subjects, I tried to think about the learning process and what would be worthy when assessing the process and the product. When the work is performed collaboratively, it should also be assessed collaboratively." [S52] "I learned that I find it important to take part in the self-assessment process. It helps me a lot and creates an order in my paper writing. It calms me to know in advance what I am aiming for and what is required from me. Additionally, it gives me a sense of confidence that I am part of a process." [S19] "It's very difficult for me to assess myself since I am very strict when I give myself grades." [S111]
Independent Learner and Self-efficacy	Strong motivation A sense of commitment A sense of responsibility Expressing the learner's creativity The learner is visible The learner is involved	"I learned that when I am responsible both for the preparation of the work and also the rubric, this increases my motivation to complete the work and I also feel confident and more prepared to present the assignment." [S90] "I learned that although skills are needed to create the rubric and to check it, it's still very important to wait a bit and to create a desirable rubric with the pupils and in any case it's good to equip the student/pupil with this rubric. Its far fairer and in this way the pupil can direct their work and assess their abilities." [S14]
Contents	Sharpening the contents	"The process enabled me to see the entire creative process of work and not just the end product, as a project." [S9] "I learned that my sense of commitment when I cooperate in the creation of a rubric is strong and that the collaborative creation of the rubric increases the sense of personal responsibility and the learner becomes involved in the teaching and learning processes and that sharpens the contents that are studied." [S83] "I felt that I could "crack" the assignment and went deeply into each stage of the preparation and presentation." [S92]

The data in Table 2 clearly show that during the process the students felt that the collaborative methods contributed to their learning and assessment skills. It also shows that the students needed to adjust the assessment tools to be accurate and applicable and that it was important they were competent in their assessment skills. Further, the students dived deeply into the task and the learning content, which emphasized their independent learner skills.

The findings from the open-ended questions show that through the process of collaboratively creating a rubric and self-assessment, students can delve deeper into content and attain higher achievements. As S17 noted:

> *This experience helped me better understand what the requirements of the activity are and what the ideal activity should look like. The staff all try to do their best, but the process of creating the rubric puts the focus on the important points that should be considered. I learned how to transform my work from good to excellent and I found things to improve and preserve.*

Many students expressed their appreciation of the rubric's contribution to deepening and streamlining their work. S72 remarked, "The assessment gives us (those who prepared the activity) points to think about and ways to make our work more effective," while S101 added, "I've learned that I can build a task in a clear manner and be more creative and move out of the box. I have learned how to test myself better, mainly with the rubric itself, when there is an opportunity to improve things." In this context, S6 stated:

> *I learned that if I look at my work over the process, I can give a grade that is appropriate and an appropriate assessment for the situation in which I worked (if I do the job and every time I improve my job I might get a higher score and higher evaluation than if I simply do the work and what I did from the start was OK).*

And S49 noted:

> *I learned to look at things in the macro. When you do work you look at things in the micro, you delve into the last detail. When you evaluate the work later, you look at it overall, according to criteria, and you can see the whole picture. I learned to see myself in a mirror, to examine myself with a critical eye and learn.*

It turns out that for some students the rubric guided them and prepared them for the assignment. According to S61:

> *This time I referred to the rubric before I did the work, so this time I knew exactly how to prepare for the self-assessment. I think that with the help of cooperation, good chemistry, responsibility and proper management, collaborative learning is effective. Collaborative learning has many advantages in comparison with its disadvantages. However, before giving the students a particular assignment, it should be considered whether it is suitable for collaborative learning and what value it will have in comparison to a personal assignment.*

The powerful experience of the process and the sense of belonging that the process encouraged was noted by S78:

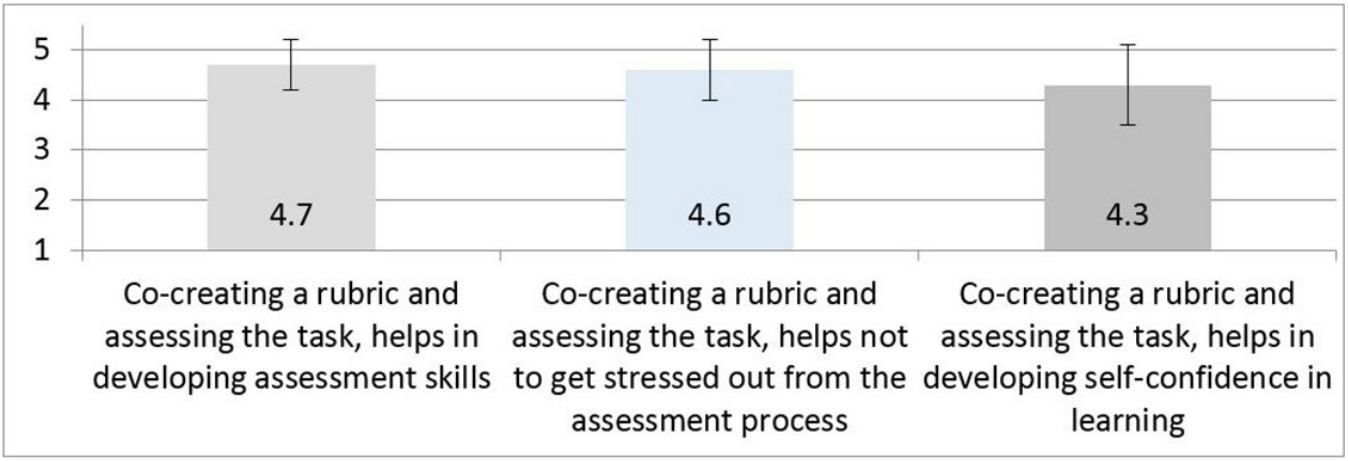
> *Collaborative work was productive and constitutes a force for cooperation between the students. When each student takes an active part in the learning process and shares things with the members of their group, this activity enables all the students to participate and to feel that they belong. Each student is committed to the process and give their strengths to the process. Thank you for the opportunity to learn and to share.*

Question 2—What are the Attitudes of Students Who Cocreated a Rubric Concerning Its Contribution to their Mastery of the Assessment Process?

From the perspective of future teachers, the students held very positive views regarding the contribution of the cocreation of the rubric to their mastery of the assessment process as is shown in Figure 3.

Students reported not being stressed by the assessment process ($M = 4.6$, $SD = 0.6$), developing self-confidence in learning ($M = 4.3$, $SD = 0.8$), and developing assessment skills ($M = 4.7$,

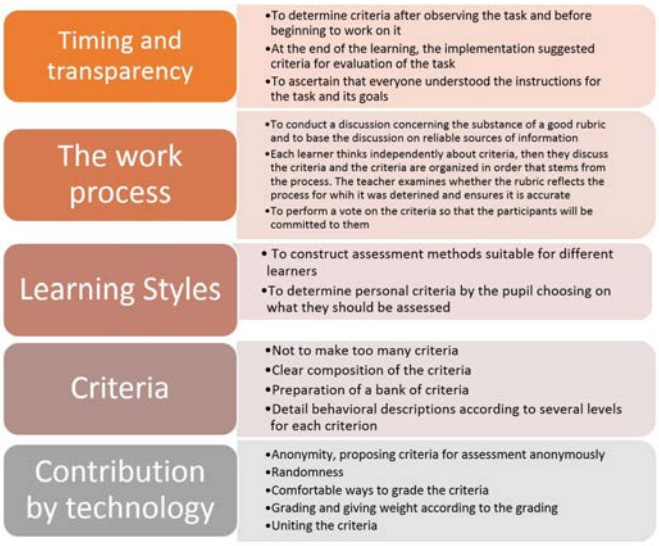
Figure 3. The Contribution of the Cocreating the Rubric to the Assessment Process Mastery (N=120)



SD = 0.5). Students discerned a high rate of complexity when cocreating the rubric (M = 3.4, SD = 1.1) and the need for specific knowledge (M = 3.9, SD = 0.9).

Following the experience, students were asked to relate to the process of cocreating rubrics. Students' suggestions are presented in Figure 4.

Figure 4.
Suggestions for the Process of Determining Criteria to Assess Performance of a Task



As can be seen in Figure 4, students were aware of the contribution of the various stages of the cocreation of rubrics. They indicated the importance of the preparation and explanation stage, the potential that the process holds for individualized instruction, and the contribution of the technology. Following the experience of cocreating a rubric, students suggested a few challenges and recommendations.

Different students faced different challenges both when trying to reach an agreement and in getting the most out of the cocreation of the rubric. Nevertheless, students adhered to a respectful discourse and gave room to various opinions, learners' needs, and preferences, while engaging in productive cooperation and synergy.

In general, the students expressed positive views on creating the rubric and their self-assessment. Nevertheless, the students did not deny the importance of the lecturer's role in the process. They suggested that the lecturer should:

(a) Allocate enough time for the whole process.
(b) Begin by having each student suggest criteria.
(c) Allow students to discuss all criteria and make their preferred selection.
(d) Have students reflect on criteria after conducting self-assessment.
(e) Provide their own insights on the various submissions.

S23 spoke about the importance of involvement in the process of preparing the rubric and evaluating the performance of the assignment with its help:

> *It is not the first time that I have performed self-assessment. When I read the rubric at the beginning it made me think whether throughout the work process, I had done*

what was written there. In other words, whether I had complied with all the criteria. I liked the fact that the questions in the rubric were written in accord with the assignment that we had received and we were asked to write in it how we wanted to assess ourselves and which questions we would like to use to build the rubric from the process that we had undergone together. Now, after I have answered all the questions on the self-assessment form and assessed myself with the help of the rubric, I have discovered that I bond well with the subject of self-assessment, reflection etc. This activity led me to understand how thorough I had been throughout the assignment and what was the extent of my investment.

S5 added:

In parallel to the rubric, the self-assessment was an easy process that provided feedback that advanced my learning. Nevertheless, it is very important to ensure fair assessment to ensure a fair process, this is the only way to ensure improvement and growth.

The students testified to the connection between the rubric and the assignment requirements. S31 remarked:

I learned about myself, because the rubric for the assignment enabled me to know what I needed to do in the work in the best possible way and then I could assess myself in the most accurate manner. I learned that the rubric was a very helpful tool and focuses on the process and that it is almost impossible to work without it.

Moreover, the students noted that the rubric enabled them to perform a very precise assessment. S19 said:

I learned that I can assess my work in a reliable and fair manner according to the structured and clear criteria in line with the rubric, the self-assessment is an easy process that advanced learning. The addition of criteria also contributed to thinking about what was needed in collaborative writing.

S77 added:

I learned that it is difficult to assess yourself but when there is a certain guidance for example with a question or criterion that you need to examine objectively, then it is far easier." Similarly, S9 said: "self-assessment is not simple, but when there are clear criteria that are predetermined that makes the process much simpler … it allows you to adhere to parameters for each stage in the self-assessment and to remain objective.

Question 3—What are the Attitudes of Students Who Cocreated Rubrics Towards the Implementation of Cocreating a Rubric with Their Pupils?

Following the experience of cocreating a rubric and self-assessing their work, the students related their intention to implement a similar process with their pupils. The results show that students held a moderate perception of their having obtained the skills to apply the cocreation of a rubric with their pupils ($M = 3.1$, $SD = 1.0$), yet their intentions to apply the cocreation of a rubric with their pupils were quite high ($M = 4.0$, $SD = 1.1$).

When looking at the correlation, the variables "students' contribution to the cocreation of the rubric" and "intention to apply creating rubrics with pupils" were found to be moderately positively correlated, $r(120) = .34$, $p < .01$.

The process of preparing the rubric and performing the assessment was perceived by the students as an important process for working with their pupils. On this matter S111 noted:

When you assess yourself, you gain the ability to observe your work from the side in an effective and optimal way. I use self-assessment and rubrics in almost every lesson that I lead in the class, even if it is a simple lesson. The rubric helps the pupils to know exactly what they are required to do in the assignments, step after step. In fact, it improves the order of their work and contributes to their self-confidence during their work.

These words were reinforced by S7:

I learned from this [the rubric] that I need to use it more with my students and that

it would help them attain better achievements … I think that self-assessment is very important, even for my pupils since they can learn a lot from it about themselves in a good and critical manner. When there is guidance to conduct self-assessment, it is far easier. The activity was instructive and I am sure that I will take a lot from it for my professional career, because I think it is very important for us as the future teachers to learn the ability for self-criticism and self-assessment and also for our pupils even though they are relatively much younger.

DISCUSSION AND CONCLUSIONS

This study explores the effectiveness of rubrics for online self-assessment of collaborative work processes from the perspective of students. Rubrics are a pedagogic tool to both teach and evaluate students (Arter & McTighe, 2001; Stiggins, 2001). Through the rubrics, students better understand what the goals are for their learning and which standards should be employed to test the quality of their performances. It also enables them to make reliable judgments about their own work that can inform further revision and improvement in it. Students commented that they were able to grasp the goals, qualities, and requirements of the assignment before completing it. The goals were more transparent, and therefore they could meet them more thoroughly (Reddy & Andrade, 2010), so that the rubrics served as instructional guides and not just as tools for grading (Andrade, 2000; Osana & Seymour, 2004; Song, 2006; Tierney & Simon, 2004).

One of the important objectives of this study was to implement alternative teaching and impart a practical model for the cocreation of a rubric for self-assessment of collaborative work. In this study, the students assessed the collaborative product rather than their personal contribution, a more complex but attainable task (Seifert & Feliks, 2019). In addition to the self-assessment of the collaborative learning unit, assessment of peer teaching units could be added. Such an application was performed in the past but was omitted from this study to reduce the load on the students.

The students attested to the fact that they learned to adapt their methods of assessment to the teaching goals, identify the quality of their work, and improve their future performance (Ballantyne et al., 2002; Fu et al., 2019; Hafner & Hafner, 2003; Stiggins, 2001). Throughout the assessment process, students expressed positive opinions in relation to the cocreation of a rubric (Figures 1, 2, 3, and 4).

Students were able to understand the value of the rubric they cocreated but also its potential for inaccuracy. The research shows that the process of cocreating a rubric online involved all students in brainstorming and selecting the criteria, increased their flexibility to work at any time and place, and allowed them to examine the rubric criteria in greater depth. It also confirms that when the students performed the assessment through the rubric they cocreated, this enhanced their learning and improved their critical abilities. Moreover, in order to perform self-assessment, they needed to structure and examine their work before they submitted it for peer assessment (Falchikov, 1986).

When using the rubric, the rubric's instructions and its analytic character facilitated the students' assessment and, to some extent, reduced gaps in the assessments. However, the analytical rubric sometimes restricted the space for any consideration of students' creativity or for more profound consideration of additional or interesting viewpoints. It is important to process the rubric to ascertain that maximum accuracy is reached in adapting it to the demands of the assignment. Though analytical rubrics were implemented in this study, lecturers should choose between a holistic or an analytical rubric, or a combination of the two, with caution and allocate enough time for the selection process and leave space for creativity.

Although the rubric reduced the space for creativity to some extent, the assignment itself, which required the production of a learning unit in groups, encouraged collaborative work and was fascinating for the students in terms of the teaching methods that it offered and the types of interaction created between the learners and between the learners and the lecturer. The students noted that cocreating rubrics contributed to creating new connections and new relationships with other students, thus enhancing their communication skills. When students took part in planning the rubric and the self-assessment, they invested optimally in the process, which produced high motivation for them to perform well in the entire process for all its stages.

The students' reflections indicated that they took responsibility for the assessment process and understood its complexity, the level of investment required, and their burden of responsibility. They also understood that the process would help them and their future pupils to improve their performance. The large variety of students' responses at different stages of the collaborative writing in the cocreation of the rubric and the assessment indicates the importance of explicit instruction and guidance, especially before students begin the assessment processes, to prepare the students for what is expected of them. In any case, the lecturer should plan ahead, be familiar with the online procedures and their different possibilities, and should choose an intervention method appropriate to the specific course and the students' performance preferences.

In terms of the lecturer's role, the process should be transparent and ensure that each student is aware of the transition between the various stages. Also, the lecturer should maintain their hand on the pulse of the process and schedule the transition between the stages. They should also consider the needs and preferences of the various learners and direct the activities to help develop the students' self-efficacy (Nielsen, 2021).

For the process to be effective, lecturers need to ensure that all students get involved in this as a class activity via discussions so that not just a few students, usually the most involved ones, dominate the process. Given that the participants were graduate students in education and highly attuned to pedagogy, the results of this study may require a few adaptations to be generalizable to other students, especially undergraduates. Online teaching has become an inseparable component of the education system, which means that educators need to develop abilities to combine knowledge of assessment with techno-pedagogical knowledge to enable the intelligent application of assessment methods (Seifert, 2022). The application of these assessment methods constitutes one of the alternatives that has been implemented in the course with the aim of introducing students to a variety of possible online assessment methods and of helping them acquire knowledge in assessment and apply these methods in the online environment (Mertler, 2009).

The study findings indicate that the online assessment process necessitates that lecturers be flexible and in continuous contact with the learners while making adjustments in the transition dates from stage to stage as needed. In future applications, I recommend starting with the process of self-assessment and only when this is complete moving on to the process of peer assessment and collaborative assessment of joint work. In this study, I found that the students' cocreation of a rubric contributed to their performance quality, to the assessment process, to their attitudes towards cocreating a rubric, and towards rubric implementation with their own pupils. It is crucial to encourage future teachers to be independently reflective so they are confident and display a deeper level of thinking in the design and implementation of assessment that fits the learning process. Creating a positive learning experience for the students can assist and encourage them to incorporate alternative assessment methods with their pupils.

References

Alaidi, A., Yahya, O., & Alrikabi, H. (2020). Using modern education technique in Wasit university. International Journal of Interactive Mobile Technologies, 14(6), 82–94. https://doi.org/10.3991/ijim.v14i06.11539

Andrade, H. G. (2000). Using rubrics to promote thinking and learning. Educational Leadership, 57(5), 13–19.

Andrade, H. L., & Du, Y. (2005). Student perspectives on rubric-referenced assessment. Educational & Counseling Psychology Faculty Scholarship. 2. https://scholarsarchive.library.albany.edu/edpsych_fac_scholar/2

Arter, J., & McTighe, J. (2001). Scoring rubrics in the classroom: Using performance criteria for assessing and improving student performance. Corwin Press.

Bacchus, R., Colvin, E., Knight, E. B., & Ritter, L. (2020). When rubrics aren't enough: Exploring exemplars and student rubric co-construction. Journal of Curriculum and Pedagogy, 17(1), 48–61. https://doi.org/10.1080/15505170.2019.1627617

Ballantyne, R., Hughes K., & Mylonas, A. (2002). Developing procedures for implementing peer-assessment in large classes using an action research process. Assessment & Evaluation in Higher Education, 27(5), 427–441. https://doi.org/10.1080/0260293022000009302

Bartlett, M.S. (1954) A note on the multiplying factors for various chi square approximations. Journal of the Royal Statistical Society, 16(2), 296–298. https://doi.org/10.1111/j.2517-6161.1954.tb00174.x

Boud, D. (2013). Enhancing learning through self-assessment. Routledge.

Chinn, D. (2005). Peer-assessment in the algorithms course. ACM SIGCSE Bulletin, 37(3), 69–73. https://doi.org/10.1145/1151954.1067468

Creswell, J. W. (1998). Qualitative inquiry and research design: Choosing among five traditions. Sage.

Creswell, J. W., Plano Clark, V. L., Gutmann, M., & Hanson, W. (2003). Advanced mixed methods research designs. In A. Tashakkori & C. Teddlie, C. (Eds.), Handbook of mixed methods in social and behavioral research (pp. 209–240). Sage Publications.

Derwin, E. (2022a). Rock your rubric: Calibration, collaboration and conversation. In T. Bastiaens (Ed.), Proceedings of EdMedia+ Innovate Learning (pp. 166–168). Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/221282/

Derwin, E. (2022b). VALUE is everything! Step up to incorporate essential learning outcomes. In T. Bastiaens (Ed.), Proceedings of EdMedia+ Innovate Learning (pp. 182). Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/221285/

DiGiovanni, E., & Nagaswami, G. (2001). Online peer review: An alternative to face-to-face? ELT Journal, 55(3), 263–272. https://doi.org/10.1093/elt/55.3.263

Falchikov, N. (1986). Product comparisons and process benefits of collaborative peer and self-assessments. Assessment & Evaluation in Higher Education, 11, 146–166. https://doi.org/10.1080/0260293860110206

Fraile, J., Panadero, E., & Pardo, R. (2017). Co-creating rubrics: The effects on self-regulated learning, self-efficacy and performance of establishing assessment criteria with students. Studies in Educational Evaluation, 53, 69–76. https://doi.org/10.1016/j.stueduc.2017.03.003

Fu, Q. K., Lin, C. J., & Hwang, G. J. (2019). Research trends and applications of technology-supported peer assessment: A review of selected journal publications from 2007 to 2016. Journal of Computers in Education, 6(2), 191–213. https://doi.org/10.1007/s40692-019-00131-x

Gibson, D., Irving, L., & Seifert, T. (2018). Assessing personal learning in online collaborative problem solving. In M. Shonfeld & D. Gibson (Eds.), Collaborative learning in a global world (pp. 450–450). Information Age Publishing.

Hafner, J. C., & Hafner, P. M. (2003). Quantitative analysis of the rubric as an assessment tool: An empirical study of student peer-group rating. International Journal of Science Education, 25(12), 1509–1528. https://doi.org/10.1080/0950069022000038268

Holmes, L. E., & Smith, L. J. (2003). Student evaluations of faculty grading methods. Journal of Education for Business, 78(6), 318–323. https://doi.org/10.1080/08832320309598620

Iglesias Pérez, M. C., Vidal-Puga, J., & Pino Juste, M. R. (2022). The role of self and peer assessment in Higher Education. Studies in Higher Education, 47(3), 683–692. https://doi.org/10.1080/03075079.2020.1783526

Isaacs, G. (2001). Assessment for learning. Teaching and Learning in Higher Education Series. Teaching and Educational Development Institute, University of Queensland.

Kaiser, H. F. (1970). A second generation little jiffy. Psychometrika, 35(4), 401–415. https://doi.org/10.1007/BF02291817

Lauricella, S. (2022). Equitable assessment in online environments. In R. Kay & B. Hunter (Eds.), Thriving online: A guide for busy educators. Ontario Tech University. https://doi.org/10.51357/CEFD2689

Lejk, M., &Wyvill, M. (2001). The effect of the inclusion of self-assessment with peer-assessment of contributions to a group project: A quantitative study of secret and agreed assessments. Assessment and Evaluation

in Higher Education, 26, 551–561. https://doi.org/10.1080/02602930120093887

L'hadi, Bouzidi, & Jaillet, A. (2009). Can online peer assessment be trusted? Journal of Educational Technology & Society, 12(4), 257–268.

Lin, S. S., Liu, E. Z. F., & Yuan, S. M. (2001). Web‐based peer assessment: Feedback for students with various thinking‐styles. Journal of Computer Assisted Learning, 17(4), 420–432. https://doi.org/10.1046/j.0266-4909.2001.00198.x

Magin, D. J. (2001). A novel technique for comparing the reliability of multiple peer-assessments with that of single teacher assessments of group process work. Assessment and Evaluation in Higher Education, 26(2), 139–152. https://doi.org/10.1080/02602930020018971

Mertler, C. A. (2009). Teachers' assessment knowledge and their perceptions of the impact of classroom assessment professional development. Improving Schools, 12(2), 101–113. https://doi.org/10.1177/1365480209105575

Morton, J. B., & Macbeth, W. A. (1977). Correlations between staff, peer and self-assessment of fourth-year students in surgery. Medical Education, 11, 167–170. https://doi.org/10.1111/j.1365-2923.1977.tb00586.x

Moskal, B. M., & Leydens, J. A. (2019). Scoring rubrics development: Validity and reliability. Practical Assessment, Research, and Evaluation, 7, Article 10. https://doi.org/10.7275/q7rm-gg74

Nicol, D., & Milligan, C. (2006). Rethinking technology-supported assessment practices in relation to the seven principles of good feedback practice. In C. Bryan & K. Clegg (Eds.), Innovative assessment in higher education. (pp. 64–77). Routledge.

Nielsen, K. (2021). Peer and self-assessment practices for writing across the curriculum: Learner-differentiated effects on writing achievement. Educational Review, 73(6), 753–774. https://doi.org/10.1080/00131911.2019.1695104

Orpen, C. (1982). Student versus lecturer assessment of learning: A research note. Higher Education, 11, 567–572. https://doi.org/10.1007/BF00194421

Osana, H. P., & Seymour, J. R. (2004). Critical thinking in preservice teachers: A rubric for evaluating argumentation and statistical reasoning. Educational Research and Evaluation, 10(4–6), 473–98. https://doi.org/10.1080/13803610512331383529

Panadero, E., & Jonsson, A. (2013). The use of scoring rubrics for formative assessment purposes revisited: A review. Educational Research Review, 9, 129–144. https://doi.org/10.1016/j.edurev.2013.01.002

Rahman, M. A., Novitasari, D., Handrianto, C., & Rasool, S. (2022). Challenges in online learning assessment during the Covid-19 pandemic. Kolokium Jurnal Pendidikan Luar Sekolah, 10(1), 15–25. https://doi.org/10.24036/kolokium.v10i1.517

Reddy, Y. M., & Andrade, H. (2010). A review of rubric use in higher education. Assessment & Evaluation in Higher Education, 35(4), 435–448. https://doi.org/10.1080/02602930902862859

Seifert, T., & Feliks, O. (2019). Online self-assessment and peer-assessment as a tool to enhance student-teachers' assessment skills. Assessment & Evaluation in Higher Education, 44(2), 169–185. https://doi.org/10.1080/02602938.2018.1487023

Seifert, T. (2020, June 23). Student assessment in online learning: Challenges and effective practices during Covid-19. In Proceedings of EdMedia+ Innovate Learning (pp. 106–108). Association for the Advancement of Computing in Education (AACE).

Seifert, T. (2022, November 1). Pedagogical challenges and effective practices of online assessment during Covid-19. In T. Bastiaens (Ed.), Proceedings of EdMedia+ Innovate Learning (pp. 174–181). Association for the Advancement of Computing in Education (AACE).

Song, K. H. (2006). A conceptual model of assessing teaching performance and intellectual development of teacher candidates: A pilot study in the US. Teaching in Higher Education 11(2), 175–190. https://doi.org/10.1080/13562510500527701

Stiggins, R. (2001). Student-involved classroom assessment (3rd ed.). Merrill.

Sung, Y.-T., Chang, K.-E. Chiou, S.-K., & Hou, H.-T. (2005). The design and application of a web-based self and peer-assessment system. Computers and Education, 45, 187–202. https://doi.org/10.1016/j.compedu.2004.07.002

Tajima, E. A., Song, C., Meyers, M. K., & Maglalang, J. M. (2022). Measuring social work competencies: Comparing field instructor, classroom instructor, and student self-assessment competency ratings. Journal of Social Work Education, 58(1), 46–62. https://doi.org/10.1080/10437797.2020.1817819

Tashakkori, A., & Teddlie, C. (Eds.). (2003). Handbook on mixed methods in the behavioral and social sciences. Sage Publications.

Tierney, R., & Simon, M. (2004). What's still wrong with rubrics: Focusing on the consistency of performance criteria across scale levels. Practical Assessment, Research & Evaluation, 9, Article 2. https://doi.org/10.7275/jtvt-wg68

Tinsley, H. E., & Weiss, D. J. (1975). Interrater reliability and agreement of subjective judgments. Journal of Counseling Psychology, 22(4), 358–376. https://doi.org/10.1037/h0076640

Tinsley, H. E., & Weiss, D. J. (2000). Interrater reliability and

agreement. In H. E. Tinsley & S. D. Brown (Eds.), Handbook of applied multivariate statistics and mathematical modeling (pp. 95–124). Academic Press. https://doi.org/10.1016/B978-012691360-6/50005-7

Yang, A. C., Chen, I. Y., Flanagan, B., & Ogata, H. (2022). How students' self-assessment behavior affects their online learning performance. Computers and Education: Artificial Intelligence, 3, 100058. https://doi.org/10.1016/j.caeai.2022.100058

APPENDIX

Means, Standard Deviation, Pearson Correlation and Factor Loadings for the Survey Items

Table 3.
Means and Standard Deviation for the Survey Items

Factor	Mean	Standard Deviation
Contribution of cocreating the rubric to the learning process	3.88	.94
Skills, confidence, and intention for implementing cocreating a rubric with pupils	3.84	.92
Personal perception and contribution to the cocreation of the rubric	3.58	0.98
Contribution of cocreating a rubric to personal learning and assessment skills	3.58	1.00

Table 4.
Pearson Correlation Matrix for the Survey Items

Variable	1	2	3	4
A. Contribution of cocreating the rubric to the learning process	-			
B. Skills, confidence, and intention for implementing cocreating a rubric with pupils	.84**	-		
C. Personal perception and contribution to the cocreation of the rubric	.44**	.45**	-	
D. Contribution of cocreating a rubric to personal learning and assessment skills	.71**	.50**	.70**	-

Table 5.
Factor Loadings for the Questions

	Component			
Item	1	2	3	4
Component 1: Contribution of cocreating the rubric to the learning process (α=0.96)				
9. Cocreating a rubric and assessing the task, helps to better evaluate the task	1.140	−0.141	−0.087	−0.146
10. Cocreating a rubric and assessing the task, allows more precise understanding of the task	1.042	−0.201	0.005	0.003
11. Cocreating a rubric and assessing the task, improves understanding of the task	1.014	−0.173	-0.054	0.159
7. Cocreating a rubric and assessing the task, produces better performance	0.779	0.249	−0.195	0.062
4. Cocreating a rubric and assessing the task, enhances motivation	0.769	0.218	−0.032	0.089
12. Cocreating a rubric and assessing the task accordingly to the rubric, results in more objective and fairer assessment by the teacher	0.710	−0.103	0.151	0.230

2. Importance of assessing a task through cocreating a rubric	0.619	0.245	0.275	−0.344
3. Cocreating a rubric and assessing the task according to it, results in Improving knowledge	0.596	0.021	0.190	0.275
8. Cocreating a rubric and assessing the task according to the rubric, allows you to optimize the time devoted to performing the task	0.478	0.380	−0.138	0.251
15. The level to which the criteria, which constitute the rubric assist in assessing the task	0.450	0.375	0.122	−0.283
5. Cocreating a rubric and assessing the task helps in developing self-confidence in learning	0.441	0.140	0.232	0.436
Component 2: Skills, confidence, and intention for implementing cocreating a rubric with pupils (α=0.62)				
18. Obtain skills to apply cocreating a rubric with pupils	0.038	0.594	0.096	0.058
16. The extent to which the rubric was used before approaching the task	−0.009	0.522	−0.120	−0.044
19. Intention to implement cocreation of a rubric with pupils	0.161	0.499	−0.127	0.180
Component 3: Personal perception and contribution to the cocreation of the rubric (α=0.79)				
1. Level of contribution to the cocreation of the rubric	−0.091	0.143	0.910	−0.167
14. The quality of own contribution to the cocreation of the rubric	−0.037	0.186	0.809	−0.085
17. Assumes that specific knowledge is required for cocreating a rubric	−0.124	−0.244	0.774	0.437
16. Perception of cocreating a rubric as a complex and time-consuming task	0.122	−0.270	0.526	0.133
Component 4: Contribution of cocreating a rubric to personal learning and assessment skills (α=0.90)				
13. Cocreating a rubric and assessing the task helps reduce stress from the assessment process	0.104	0.140	0.002	0.849
6. Cocreating a rubric and assessing the task helps in developing assessment skills	0.322	0.172	−0.056	0.345

Note: A strong positive correlation was found between Component 1: Contribution of the cocreating the rubric to the learning process, and Component 2: Skills, confidence, and intention for implementing cocreating a rubric with pupil. A medium positive relationship was found between Factors 1 and 3, Factors 1 and 4, and Factors 2 and 4. A poor correlation was found between Factors 2 and 4 and Factors 3 and 4.