**Changes in the Perceptions of Self-assessment in Courses with Different Approaches to Assessment**

**Abstract**

The importance of student self-assessment and its contribution to study in higher education institutions is an issue well rooted in the research literature, but there is a need to bolster the pedagogical knowledge base and to complete what we lack in understanding regarding the questions of when and why self-assessment actually works. The qualitative study conducted, involved 135 students studying at two teacher training colleges in Israel. The students attended seven courses with differing evaluation approaches: summative, formative and integrative (a combination of formative and summative evaluation) with a differing degree of involvement in determining the evaluation criteria. Self-assessment was integrated into all the courses. The purpose of the study was to examine the students’ perception of self-assessment prior to the course and at the end of it, after they had gained some experience with self-assessment. The findings show that the experience with self-assessment in the courses with formative evaluation or integrative evaluation encourages the students’ positive perception of self-assessment in contrast with the students attending the summative evaluation courses. The study serves to expand our understanding of the importance of student involvement in the evaluation processes, as well as the place of the feedback in the process. These two factors had the greatest impact on the students’ perceptions, as well as on the precision of their self-grading.

**Keywords**:

Self-assessment, formative evaluation, summative evaluation, student perceptions

**Self-assessment**

There appears to be no consensus in the literature as to the question of what self-assessment actually is. The use of this term describes a broad variety of activities and mechanisms, and reviews of self-assessment call for a much clearer definition of the term (Panadero, Brown and Strijbos, 2016; Brown and Harris, 2014). From a pedagogical perspective, self-assessment is the personal capability to identify the components and characteristics of work, self-skills or performance, and to judge their value (Tai, Ajjawi, Boud, Dawson and Panadero, 2018).

Self-assessment is almost a synonym for the term self-regulated learning (SRL), mainly in the context of setting goals, monitoring the study, and metacognition. The implication of this is that self-assessment should be able to contribute to the study itself, for example by improving the clarity of the study goals and involving the students in monitoring their own study process (Panadero, Jonsson and Botella, 2017). According to Bourke (2014), self-assessment is accompanied by the students’ critical reflection on their knowledge and the understanding and application of skills during this process encourage a deeper approach to learning. Therefore, students need to acquire these skills of evaluating the knowledge and judging their performance to succeed in higher education (Guillory and Blankson, 2017). It is through this process that the students become active and responsible for their study (Harris and Brown, 2018), and the self-assessment helps to reveal their strengths and weaknesses, thus improving their future performance.

Various studies, including two meta-analyses (Graham, Herbert and Harris, 2015; Sanchez et al., 2017) portray a positive link between self-assessment and cognitive capabilities, and academic achievements. From these reviews and additional studies, we can generally say that students involved in self-assessment tend to improve their cognitive capability and their exam grades in comparison with students who have not conducted self-assessment. Consequently, self-assessment should improve study and performance, and researchers relate to self-assessment not only as an alternative method of evaluation in teaching, but also as a strategy for promoting productive learning (Yan et al., 2020).

Student self-assessment can be conducted quantitatively, qualitatively or theoretically, and it includes different techniques and various tools, via which the students describe and evaluate the quality of their study products (Panadero, Brown, and Strijbos, 2016). The selected tool will be determined, inter alia, based on the objective of the use of the self-assessment and according to the criteria and standards presented, or the lack of them. These tools include self-assessment templates, self-assessment checklists, scripts, and rubrics (Harris and Brown, 2018). Panadero et al. (2013) examined standards relating to self-assessment while using rubrics or lists of assessment criteria depicted as questions (such as, did I clearly word the main goal in my work?). They found that those students who used the list of self-regulation questions had higher levels of learning compared with the rubrics group.

Much discussion has centered on the question of whether self-assessment should be formative or summative. Formative evaluation enables both the student and the teacher to monitor the learning process using feedback, with the goal being to effect changes to improve both study and pedagogical performance. In summative evaluation, the teacher examines whether the student has attained the study goals on completion of the course or the study unit by means of a grade (Ferrell, 2012). Andrade (2019) addressed the question of what the purpose of self-assessment is and why students are asked to evaluate themselves, and answered that the inherent value in self-assessment is in the existence of feedback, with the objective of the feedback being to deepen the learning and improve its performance. In other words, if the student has no opportunity to make corrections and changes, then the self-assessment has no real value. Yan and Brown (2017) present a model of student involvement in self-assessment and stress the components of the immediate self-feedback and self-reflection.

In practical terms, self-assessment is used in both formative and summative evaluation (Panadero, Brown and Strijbos, 2016). Notwithstanding, it appears that self-assessment has a much greater advantage in processes of formative evaluation, as it focuses on the learning process rather than the grade (Brown, Andrade and Chen, 2015). Moreover, the difficulty with respect to the accuracy and the validity of self-assessment is much more prominent in summative evaluation (Yan and Brown, 2017), and this factor too might go to explaining its advantage when combined with formative evaluation.

**Student Perceptions of Self-assessment**

Studies of the perceptions of young students indicated a superficial understanding of the self-assessment goals (Bourke, 2016). In contrast to this, studies conducted within higher education establishments have shown that for the most part, the students did understand the need for self-assessment (Ratminingsih, Marhaeni and Vigayanti, 2018) and they believed it was beneficial mainly for the purpose of improvement and revision (Micán and Medina, 2017). Moreover, college and university students believed that self-assessment increases responsibility to studying (Bourke, 2014; Ndoye, 2017) and it nurtures self-regulated learning by goal setting, planning, monitoring and feedback (Wang, 2017).

These positive perceptions regarding self-assessment tended to appear in students who were involved in formative evaluation, who were involved in defining the criteria of their evaluation (Bourke, 2014) or who used various tools such as checklists that enabled them to revise their work (Wang, 2017). However, adult students attending courses in which summative evaluation was used also reported that the self-assessment helped to foster critical thinking (Van Helvoort, 2012).

Although generally the perception of self-assessment tends to be positive, some of the students might think that the process of evaluation is the teacher’s responsibility (Thawabieh, 2017). Therefore, the students’ understanding of their role in self-assessment and the clear definition of the role of the teacher and the student from the very start of the process have an impact on the perceptions of the evaluation (Mannion, 2021).

**The Importance of the Study and its Objectives**

Despite the existing knowledge base regarding the importance of self-assessment and its contribution to study, a considerable portion of the evaluation processes in academic institutions involves summative evaluation by the teacher alone. In order to encourage teachers to combine student self-assessment in their teaching, it is important to bolster the pedagogical knowledge base regarding self-assessment and to examine how and in what type of courses and types of evaluation the self-assessment should be implemented.

Finding practical tools for contending with evaluation issues is the key challenge in education (Taras and Davies, 2012), while understanding the students’ perceptions is an important component in building these tools. There are only some 15 studies that have looked at students’ perceptions of self-assessment (Andrade, 2019) and only some of them relate to adult students in tertiary education institutions. It is not entirely clear why self-assessment works and the limited number of studies focusing on the motives of students to conduct self-assessment (Yan et al., 2020) was one of the driving factors behind the current study towards understanding the various perceptions of the students.

The overarching goal of this study was to examine the contribution of self-assessment in courses with various approaches to evaluation from the point of view of students in teacher training colleges. The direct goal was to examine the perceptions of the students prior to their self-assessment trial and afterwards in the following types of courses: a. courses with summative evaluation where the students were not involved in determining the evaluation criteria. b. courses with formative evaluation where the students were involved in determining the evaluation criteria. c. courses with integrative evaluation (combining both summative and formative evaluation) where the students were partly involved in determining the evaluation. The study questions derived from these objectives were:

1. What are the students’ perceptions of self-assessment both before and after their self-assessment trial in the various courses?
2. How did the involvement of the students in determining the evaluation criteria in the course and their prior experience with self-assessment affect their perceptions and the grade they awarded themselves?

**Methodology**

A qualitative study approach was selected for this study, as the general objective was to describe a phenomenon regarding which the existing information is only partial (Merriam and Tisdell, 2015).

***The Study Population and the Course Characteristics***

The study population included 135 students who studied in seven science teacher training courses at two teacher training colleges in Israel, one was a religious college and the other a secular college, where Jews and Arabs study together. Table 1 portrays the number of students attending each course, their gender and their age range. There were 66 students who were studying for a bachelor’s degree in science education (B.Ed.) and 69 students were actual teachers who were studying for their master’s degree (M.Ed.) in the same field. All the courses were taught by the author of this article between 2012 and 2018. Table 2 depicts the names of the courses, for which academic degree it was being studied (B.Ed. or M.Ed.), the course duration, the type of evaluation, the components of the evaluation and the students’ involvement in the evaluation process in each course. Two courses were studied for two hours once a week during one term (a total of 28 hours) and five courses for two terms (a total of 56 hours). Four of the courses belong to B.Ed. studies and three to M.Ed. studies. In two of the courses, summative evaluation is provided using an examination, in three courses formative evaluation is awarded based on an academic work and a presentation, and in the other two courses integrative evaluation (combining both summative and formative evaluation) is provided via exercises and work. Student self-assessment was also integrated into all the courses.

***The Study Process and Data Collection***

*Evaluation methods in the courses*. In the two cell biology courses summative evaluation was given using an exam at the end of each term. The students were not involved in determining the type of evaluation or the sub-topics of the exam and their value. The topics, with example questions, were presented to the students prior to the test and the student self-assessment simply amounted to the evaluation of their test grade.

In the three seminar courses in which the students were required to write a research work (either theoretical or empirical), the evaluation was formative with a numerical grade and the students were involved in determining the criteria and their relative value. On completion of study of the structure and role of each of the chapters of the work, a class discussion was held on the components to be included in that particular chapter. The discussion led to the joint creation of personal checklists of the sub-components deemed important to appear in each chapter of the work. An example of such a list (for the discussion chapter) that was worded as questions can be seen in the appendix. The students who elected to do this were given the chance of sending each chapter or parts of the chapters separately for checking, together with the personal lists of the chapters. On submitting the complete work, the students were asked to attach the personal lists for each chapter in which they marked what item from each list was contained in each chapter of their work, and explained why certain components were missing or incomplete. The works that were checked included detailed feedback on the work and the personal lists and were then returned to the students for revision and resubmittal.

The two research study writing workshops involved both evaluation approaches: summative and formative. The summative evaluation did not involve student participation and relates to the four exercises they had to hand in as part of their coursework obligations. In each exercise, the students also attached the grade they assessed to have deserved for the exercise. Each of the exercises exposed the students to a different chapter in the research work (literature review, methodology, findings and discussion), the students received feedback for each exercise, but no opportunity was afforded for revision and resubmittal. The formative evaluation was given for the concluding work of the course and the students were involved in the process of determining the criteria, as described earlier in relation to the seminar papers, and they were asked to attach their personal lists for each section of the work.

*The questionnaires.* The students in all the courses replied to two questionnaires, one at the beginning of the course and the second one at its end, after sitting the exam or the final submittal of the work. The first questionnaire was mainly intended to become acquainted with the students’ perceptions with respect to self-assessment while the second questionnaire was designed chiefly to address the changes in their perceptions after their self-assessment trial during the course. Apart from general background questions (gender, age, course name, and years of teaching experience) each questionnaire contained two open questions. The questions at the beginning of the course were: a. In your opinion, should self-assessment be integrated as part of the course evaluation process? Please explain why and provide as much detail as possible. b. Have you had experience with self-assessment in the past during your higher education studies? If so, please describe this experience. The questions of the second questionnaire, after the course were: a. Did the experience with self-assessment during the course contribute to you, if so in what way and if not, why? Please provide details and give an example if possible. b. What grade would you award yourself for the work or the exam?

Filling out the questionnaires was a voluntary process, while taking care to adhere to the rules of ethics, and it lasted about 15 minutes per questionnaire. The questionnaires were distributed to all the 135 students in the various courses, 122 students answered the first questionnaire and 104 answered the second questionnaire (see Table 2). In all the courses, the grade that the student awarded himself did not affect the grade given by the teacher.

***Analysis of the Data***

The students’ answers to the first question in both questionnaires underwent content analysis (Rossman and Rallis, 2011) and were divided into categories by the author, and separately by a colleague with considerable experience in content analysis. The analysis was conducted in two stages. Firstly, all the answers were read in full to look for key ideas and consider the various options for organizing the data. In the second stage, the categories were defined that were built from the students’ statements. A few differences were found between the two analyses and after a joint discussion it was agreed to divide up the data into nine categories. Five of the categories relate to the contribution of self-assessment, such as strengthening the skills of reflection, motivation and responsibility for learning, and four categories express opposition to self-assessment, such as a lack of objectivity in evaluation or the view that this should be the function of the teacher. The breakdown of the students in each of the categories was calculated and this is portrayed in Table 3.

The answers to the second question in the first questionnaire were summed up and the number of students with prior experience in self-assessment was calculated, and then the information on this experience was collated. According to the answers to the second question of the second questionnaire, the number of students who awarded themselves either an equal or similar grade with a deviation of up to 5 points, higher or lower than the grade given by the teacher in each course was determined, and their breakdown was calculated.

**Findings**

Presentation of the findings of the first question in the two questionnaires is primarily based on the comparison between the students’ perceptions prior to their experience with self-assessment and their perceptions after gaining such experience, with reference to the three types of evaluation of the courses. Table 3 sums up the number of students who in their answer mentioned each of the categories representing their perceptions. All the students wrote more than one statement, some of which were assigned to more than one category; therefore, the sum of the numbers according to categories is higher than the total number of the students who answered the questionnaires. It is important to point out that in their answers many students referred to both the positive and negative aspects of self-assessment.

***Perceptions Prior to the Self-assessment Trial***

One of the salient components in the students’ perceptions at the start of the course, prior to their experience with self-assessment, was that self-assessment fosters personal commitment to studying. This component was mentioned by 35% of the students (Table 3). Student H, a first-year B.Ed. student, expressed this as follows: “It is advisable to integrate self-assessment in teaching if the student knows exactly what is expected of him and then this can extend the degree of responsibility that he takes for his own study.” Mention was also made of the contribution of self-assessment to the skills of reflection and motivation for studying. Some 16% of the students related to the skills of reflection, like Student S, a third-year student studying for her B.Ed., who wrote: “...if you need to evaluate yourself then you really need to think carefully about what you wrote and how you wrote it...” Some 9% of the students were of the opinion that self-assessment can also promote achievements, mainly if the grade awarded by the student to himself is included in the calculation of the final grade.

In contrast, many students also believed that it was not advisable to include self-assessment in the course evaluation process for two main reasons, one, that such evaluation is not objective (21% of the students) and the second one, that the students either cannot or do not wish to evaluate themselves (19%, see Table 3). For example, Student S, a first-year student studying for her B.Ed., wrote: “I think that there is a problem with the objectivity of self-assessment. Even if I sincerely evaluate myself, I am not sure that other students will do the same and then it won’t be fair.” or for example, Student S, a first-year student studying for her bachelor’s degree, wrote: “I think that self-assessment does contribute to learning but I don’t feel comfortable evaluating myself. I don’t want the teacher thinking that I am arrogant.” Eleven students thought that the evaluation is the job of the teacher, for example as M, a second year B.Ed. student, wrote: “...I would rather the teacher evaluate, it is his job rather than mine.”

Generally, the students attending the courses with the summative evaluation displayed more negative than positive attitudes to self-assessment. All the students in these courses were either in the first or second year of their B.Ed. studies. In contrast to them, the students attending the courses with integrative evaluation (combining both summative and formative evaluation), all of whom were teachers studying for their M.Ed., displayed the greatest number of positive perceptions and the smallest number of negative perceptions.

***Perceptions Following the Self-assessment Trial***

The overall picture of the students’ perceptions after their experience with self-assessment hardly changed among those students who were studying in the courses with the summative evaluation (Table 3). These students were not involved in determining the evaluation criteria and most of them believed that self-assessment did not contribute anything to them. Some 6% even thought that it was a waste of time, for example, as second year Student A wrote: “...it didn’t help at all. There is no need for me to evaluate myself, it is simply a waste of time...”

In contrast to this, the stances of those students who were studying in the courses involving formative evaluation, and who were heavily involved in determining the evaluation criteria, or in the courses with integrative evaluation with partial involvement in this process, experienced a marked change after their experience with self-assessment. Many more students in these two course groups believed that their experience with self-assessment did contribute to the skills of reflection and motivation for study. Furthermore, in these courses there was a significant increase in the number of students who wrote about the contribution of the self-assessment to their achievements (from 9% before to 28% after the trial). Thus, for example, Student R, a third year B.Ed. student, wrote: “...as I had to check and see if I had done and how I had done each section and sub-section in the work and to mark it on the list, I was able to submit a much more complete work and gain a better grade.”

Following this experience with self-assessment, a new factor appeared, which had not been previously mentioned by the students prior to the trial, related to the impact of the self-assessment on an environment conducive to learning. This factor was only raised among the students who studied in those courses where the evaluation was either formative or integrative. Some 30% of the students wrote about aspects relating to an atmosphere conducive to learning that was for the most part combined with motivation for study. For example, Student A, a first year M.Ed. student, wrote:

*The personal checklists and the specially tailored and encouraging feedback I received from the teacher, and which all my friends also received, did not just encourage me to revise and improve, but also it gave us a good feeling and the study atmosphere in the course was excellent, even though I found the course to be very difficult.*

Student Y, a third year B.Ed. student, also wrote:

*...this was the hardest course I took this year, writing a seminar paper demands so much time, it really isn’t simple and although I almost stopped on a number of occasions, the study atmosphere encouraged me to carry on. I also knew that even if the work would not be good, I would receive comments and could then revise it.*

The self-assessment lists and the ability to revise the work were mentioned almost across the board in the answers of the students attending the courses with formative or integrative evaluation.

***Prior Experience with Self-assessment***

Prior to the course, in the first questionnaire, the students were asked to mention if they had any past experience with self-assessment and if so, to describe that experience. It was surprising to find out that only 23 students, comprising 19%, reported that they had indeed undergone such an experience. Only two students out of those who had prior experience were first-year B.Ed. students, eight students were third-year B.Ed. students and seven were studying for their M.Ed. Most of the descriptions of this experience (18 students) pointed out the contribution of the self-assessment to study, but some of them also described difficulties alongside the advantages, thus stressing the complexity involved in self-assessment. Fourteen students wrote that the self-assessment was combined with peer assessment and that the self-grade and the peer grade was weighted (with varying percentages) with the grade given by the teacher. This fact made it difficult for some of them and they claim that it prevented objectivity. As Student N, a first year M.Ed. student, wrote: “...it was fairly clear to us that we would not undermine each other’s grades and that we would award a very high score for the presentations, even if this was not genuinely what they deserved. I did not feel comfortable with this and on occasions I was unable to justify the grade I had given...”

***The Self-assessment Grades***

The self-grade of some 65% of all the students in all the courses was extremely similar to the grade given by the teacher, 22% of the students awarded themselves a lower grade while 13% evaluated themselves by awarding a higher grade. Analysis of the breakdown of the self-grades according to courses shows quite clearly that the deviations between the self-grade and the lecturer’s grade were highest in the courses using the summative evaluation. Some 28% (nine students out of 32 who answered the questionnaire at the end of the course) evaluated themselves with a grade that was higher than the actual grade they received and 16% awarded themselves a lower grade. In contrast to this, in the courses involving the formative evaluation and also in the courses with integrative evaluation, the self-grades on the final work were mainly similar to the lecturer’s grade, and only 6% awarded themselves a higher grade, while 10% gave themselves a lower grade.

**Discussion**

The main objective of the current study was to examine what students in higher education think about self-assessment in courses with different types of assessment. The findings indicate that the perceptions amongst the overall body of students were generally more positive than negative even at the start of the course, prior to experiencing self-assessment. Many students pointed out the contribution of the self-assessment to their responsibility to learning, fostering critical and reflecting thinking, as well as motivation. At the end of the course, after gaining experience in self-assessment, many more students felt that the self-assessment had made a significant contribution. However, this change appeared only among the students who studied in those courses where the evaluation was either formative or integrative (formative and summative). The students who studied in the courses with summative evaluation provided also at the end of the course the most statements relating to the problem of objectivity in self-assessment or either their desire or ability to evaluate themselves.

In her comprehensive survey, Andrade (2019) emphasizes the importance of self-assessment by learning with formative evaluation based on feedback and providing an opportunity to revise work. Her claim is that self-assessment without feedback fails to achieve the objective and raises a fundamental question: what is the point of asking the students to evaluate themselves if there is no feedback. The students’ perceptions as they emerge from the current study tend to support this view. Almost all the students in the formative or integrative evaluation courses mentioned the important contribution of the self-checklists and the opportunity to revise their work.

The students’ awareness in this study that they would be able to gain feedback and revise their work led to a high degree of cooperation in relation to their self-assessment. The students’ responses in the summative evaluation courses not only expressed more negative aspects of the self-assessment but were also much more superficial and less complex. It is noticeable from what was said by the students attending the formative evaluation and integrative evaluation courses that the focused feedback, at the appropriate timing, led them to monitor and reflect their learning, and to share the difficulties they encountered. Many of them reported that they knew precisely which components in their work needed to be improved and this contributed to their progress and the study atmosphere.

Moreover, the students’ involvement in determining the evaluation criteria and their overall weight is a critical point (Wang,2017; Mannion, 2021), as emerges from this study too. Exactly to what extent it is necessary or advisable to involve the students in the evaluation processes is still one of the key questions that remains unanswered in relation to student assessment (Taras and Davies, 2013). The attempts to answer this question explicitly or implicitly touch upon the debate as to the desired approach using either summative or formative evaluation, and the self-assessment. The results of the current study reinforce the premise that student involvement and transparency during the assessment process contributed to their cooperation and to cultivating the positive perceptions regarding self-assessment. Even when the students were only partially involved, in the integrative evaluation courses, it was possible to see a greater improvement in the positive attitude towards self-assessment in comparison to the students who were not involved, and who attended the summative evaluation courses.

The main argument regarding professional assessment and self-assessment mainly focuses on the degree of reliability among the graded students (Brown, Andrade and Chen, 2015). Andrade’s survey (2019) presents contradictory reports about the degree of accuracy of the self-assessment also due to the difference in the evaluation approaches.

It is interesting to see here that in the formative evaluation and integrative evaluation courses, the differences between the grades that the students awarded themselves and the grades given by the lecturer were smaller in comparison to the differences in the summative evaluation courses. Many students in the summative evaluation courses awarded themselves a higher score than the teacher’s grade, in a similar vein to the students in the study of Tejeiro et al. (2012), whose self-grades tended to be higher than the grades awarded by the teachers. In contrast to this, most of the students’ self-grades in the formative and integrative evaluation courses in the current study were similar to the lecturer’s grade. These findings contradict the study of De Grez, Valcke, Roozen (2012), for example, who showed that self-assessment scores in formative evaluation courses were higher than the teacher’s grades. It appears that the students’ involvement in the assessment process in the current study, the joint definition of the evaluation criteria and their weight, the transparency and the feedback all impacted the assessment accuracy. This important finding reduces the concern regarding the reliability and validity of self-assessment and stresses the need for the active involvement of the students in the assessment process.

In a similar manner to the study of Thawabieh (2017), the current study also shows that practice helps with the degree of accuracy of the self-grade, as most of the students who accurately graded themselves were those who had past experience with self-assessment. Furthermore, Rust et al. (2003) and Langan et al. (2008), claimed that women better understand and evaluate their performance than men, who tend to over-evaluate the quality of their work. It could be that the fact that in the current study all the students in the formative and integrative evaluation courses were women, also contributed to the relatively small disparity between their assessment and the teacher’s evaluation.

One of the most challenging tasks for teachers is to make the evaluation part of the students’ learning process, and despite the accumulated knowledge on this issue, the self-assessment is an important hurdle that needs to be overcome by the higher education institutions (Berry and Adamson, 2011). It emerges from the current study that only a small portion of the students reported prior experience with self-assessment, and most of those who had prior experience tended to express more positive views towards it. It thus follows that the students should gain some experience with self-assessment, and the more the students enhance their self-assessment skills, the greater their cooperation will be in the process, together with its inherent advantages.

**Limitations and Further Research**

Alongside the insights that this study offers, we should indicate a number of limitations that point to the need for further research. Firstly, the students who took part in the study were students who studied under the author; therefore, it was a convenience sample, which might lead to some degree of deviation in the findings and thus limit their inclusion in additional populations. Moreover, even though the students did not belong to the same cultural group, they were all from Israel, and all studied at teacher training colleges specializing in teaching the sciences. Therefore, due to this reason too it is important to expand the study to additional geographic and cultural groups, and among students of other areas of study. Further research combining personal interview and even observations of the students’ involvement in the assessment process, together with the written self-reports, might deepen our understanding of the students’ perceptions regarding self-assessment and strengthen the pedagogical and practical recommendations for teachers.

**Summary**

Formative evaluation with feedback and involvement of the students in determining the criteria of their assessment fosters positive perceptions of self-assessment. From the students’ point of view, self-assessment in courses encouraged their responsibility to engage in study, their critical thinking and skills of reflection, and even their achievements. The findings reveal that the students who studied in the courses combining formative evaluation with summative evaluation also had similar thoughts on self-assessment. Consequently, it is recommended that those teachers who find it difficult to give up completely on summative evaluation in courses, should combine this with formative evaluation and self-assessment. Based on the current study, and also from other studies (Andrade, 2019), we may conclude that there is not much room for self-assessment in summative evaluation courses where the students are not involved in determining it, and these students might even develop opposition to it. Therefore, the recommendation is that as part of our modern-day higher education system, we should work towards greater involvement of the students in the assessment process instead of laying down rigid assessment criteria and standards in advance. Student involvement and the provision of feedback will bolster the skills of self-assessment and will both foster and improve their responsibility for study.

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**Appendix: Self-assessment List for the Discussion Chapter**

The discussion chapter components and their relative weight: Opening paragraph - 5 points; the body of the discussion - 25 points; the concluding paragraphs - 5 points.

1. Opening paragraph

1.1 Did I write a brief summary of the key findings so as to lead to an answer to the study question?

Yes/No/Partly. If you replied No or Partly, please explain why.

1.2 What grade do I think I deserve for the opening paragraph?

1. Body of the discussion
   1. Did I check to see that there is no unjustified repetition of the findings presented in the results chapter?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I repeat the importance of the problem?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I evaluate and interpret the results in view of the study question?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I stress the similarity and difference between the findings of the current study and findings of other studies?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I propose alternative explanations for the results?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I draw conclusions from the results and theoretical and/or practical implications?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I point out all the limitations of the study?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I propose avenues to be explored in follow-on research?

Yes/No/Partly. If you replied No or Partly, please explain why.

2.9 What grade do I think I deserve for the body of the discussion?

1. Concluding paragraph
   1. Does the paragraph contain a summary of the most important findings?

Yes/No/Partly. If you replied No or Partly, please explain why.

* 1. Did I include comments on the importance of the findings and their educational implications?

Yes/No/Partly. If you replied No or Partly, please explain why.

3.3 What grade do I think I deserve for the concluding paragraph?

**Table 1. The Study Population**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Class no. | The course name | No. of students and gender | Age range | No. of students who answered Questionnaire I | No. of students who answered Questionnaire II |
| 1 | Cell biology | 19 girls | 20-28 | 18 | 14 |
| 2 | Cell biology | 29: 9 boys and 20 girls | 19-26 | 25 | 18 |
| 3 | Study program develop seminar | 20 girls | 28-39 | 18 | 17 |
| 4 | Seminar on methods of teaching sciences | 10 girls | 23-31 | 10 | 10 |
| 5 | Seminar on methods of teaching sciences | 8 girls | 23-36 | 8 | 8 |
| 6 | Research study writing workshop | 20 girls | 28-45 | 17 | 16 |
| 7 | Research study writing workshop | 29 girls | 26-46 | 26 | 21 |
| Total |  | 135 (9 boys, 126 girls) |  | 122 | 104 |

**Table 2. Course Characteristics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class no. | Course type and name | Course duration | Degree & study year | The type of evaluation | Evaluation component | The students’ involvement in the evaluation process |
| 1 | Disciplinary course: Cell biology | 56 hours | First year of B.Ed. | Summative evaluation | Test | No involvement |
| 2 | Disciplinary course: Cell biology | 56 hours | Second year of B.Ed. | Summative evaluation | Exam | As above |
| 3 | Theoretical seminar: Study program development | 56 hours | Second year of M.Ed. | Formative evaluation | Theoretical seminar work and presentation | Joint determination of the components of assessment of the work and of the presentation, and their weight. |
| 4 | Empirical seminar: Methods of teaching sciences | 56 hours | Third year of B.Ed. | Formative evaluation | Research seminar work and presentation | As above |
| 5 | Empirical seminar: Methods of teaching sciences | 56 hours | Third year of B.Ed. | Formative evaluation | Research seminar work and presentation | As above |
| 6 | Workshop: Research study writing | 28 hours | First year of M.Ed. | Summative and formative evaluation | Exercises and concluding work | Exercises-without involvement  Work - joint determination of the components of assessment of the work and their weight. |
| 7 | Workshop: Research study writing | 28 hours | First year of M.Ed. | Summative and formative evaluation | Exercises and concluding work | As above |

**Table 3. Breakdown of the Students’ Perceptions before and after their Experience with Self-assessment**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Categories | Before  (N=122) | | |  | After  (N=104) | | |
| Summative evaluation  n=43 | Formative evaluation  n=36 | Summative+ formative evaluation  n=43 | Summative evaluation  n=32 | Formative evaluation  n=35 | Summative+ formative evaluation  n=37 |
| Self-assessment contributes to | | | | | | | |
| 1. Achievements | - | - | 11  (26%) |  | - | 16  (46%) | 13  (35%) |
| 2. Responsibility for study | 3  (7%) | 12  (33%) | 20  (46%) | 5  (16%) | 18  (51%) | 22  (59%) |
| 3. Reflection skills | 7  (16%) | 5  (14%) | 8  (19%) | 5  (16%) | 12  (34%) | 17  (46%) |
| 4. Motivation for studying | 11  (26%) | 5  (14%) | 9  (21%) | 7  (22%) | 17  (48%) | 16  (43%) |
| 5. Atmosphere conducive to study | - | - | - | - | 19  (54%) | 11  (30%) |
| Self-assessment does not contribute or is problematic because - | | | | | | | |
| 6. Assessment is not objective | 9  (21%) | 6  (17%) | 11  (26%) |  | 9  (28%) | 5  (14%) | 7  (19%) |
| 7. This is the teacher’s job | 8  (19%) | 3  (8%) | - | 7  (22%) | - | - |
| 8. I cannot or do not wish to assess myself | 13  (30%) | 6  (17%) | 4  (9%) | 12  (37%) | 2  (6%) | 4  (11%) |
| 9. It is a waste of time | - | - | - | 6  (19%) | - | - |