

Do Students Overestimate Their Contribution to Class? Congruence of Student and Professor Ratings of Class Participation

Megan L. Meyer¹
Drexel University

Stacy A. McDonald
Holy Family University

Lynn DellaPietra
Bucks County Community College

Matthew Wiechnik

Kimberly B. Dasch-Yee
Holy Family University

Abstract: As student participation is an essential component of many classes, this research attempted to foster increased congruence between student and professor ratings of class participation. Study 1 (N = 191) explored the utility of a detailed grading rubric in assessing participation. As predicted, providing students and faculty with the same rubric resulted in a moderate correlation between their ratings. Consistent with previous research, student ratings were higher than professor ratings, particularly for low participators. Utilizing this rubric, Study 2 (N = 87) examined congruency at mid-term and again at end-term. Contrary to what was predicted, feedback provided at mid-term did not increase congruence at end-term. A potential implication of this finding is underdeveloped metacognitive skills in low participators. Perhaps, more frequent and substantive feedback is essential for these students.

Keywords: participation rubric, congruence, feedback, higher education

How accurate are students at judging their level of class participation? In courses where class participation is a substantial component of the final course grade, it would be particularly useful for students to have a clear sense of this portion of their grade. It is important, therefore, to explore how accurate students are and the conditions under which the “accuracy” of student ratings (as they correspond to professor ratings) can be increased. Equipped with this information, students would have a clearer understanding of where they stand with respect to class participation grades and may be better able to adjust their participation in order to obtain the grade they desire.

Previous research has shown that students' perceptions of their level of class participation are not always congruent with professors' perceptions. For example, Burchfield and Sappington (1999) asked college students to rank themselves and their peers using a questionnaire that assessed perceived class participation and to identify the top five participators in class other than

¹ Meyer was an associate professor at Holy Family University during the researching and writing of the manuscript.

classroom participation were typically higher than both peer and professor ratings. Approximately two-thirds of those surveyed ranked themselves among the top third of participators, perhaps suggesting a self-serving bias on the part of the students (Myers, 2013). Similarly, Dancer and Kamvounias (2005) found self-enhancing tendencies among students when compared with instructors regarding participation grades in a large introductory commercial law class ($N = 296$). Criteria for assessment of class participation included preparation for discussion, contribution to discussion, group skills (e.g., appropriate classroom comportment), communication skills, and attendance; each criterion was rated on a 5-point scale. Using this assessment, students rated themselves higher than instructors, while peer and instructor ratings were consistent.

Ryan, Marshall, Porter, and Jia (2007) investigated accuracy of peer and self-evaluations of class participation as well as explored whether grade point average (GPA) was related to the accuracy of students' self-evaluations in several face-to-face courses. Ninety-six third-year professional students in three elective pre-pharmacy courses and their faculty rated students' classroom participation at Weeks 5, 10, and 16 of a 16-week semester. Faculty ratings tended to be higher than peer ratings, and self-ratings were higher than faculty ratings. A majority of the students (66%) assigned themselves a rating of 4 (*consistently participates*), whereas 31% assigned themselves a rating of 3 (*frequently participates*). A small percentage of students (3%) assigned themselves a rating of 2 (*occasionally participates*), and no students assigned themselves a rating of 1 (*rarely participates*). There was no significant correlation between GPA and faculty evaluations, peer evaluations, or self-ratings of class participation.

If students' perceptions of class participation are not congruent with the perceptions of their professor, can anything be done to increase congruence? Zaremba and Dunn (2004) suggested that asking college students to engage in self-reflection at the end of each class period might be a useful technique for assessing class participation. During the last five minutes of each class period, they asked students to utilize a 7-point scale to assess their level of participation. Professors provided feedback at the next class meeting, commenting on students' participation. Students reported that regular feedback motivated them and recommended that it be utilized in other courses, as the process compelled them to be more prepared for the class and the discussions that occurred. Having students assess themselves provided an opportunity for them to be more involved in and cognizant of the process by which their participation grade was determined. These results are consistent with findings indicating that learning increases when students are provided with feedback about their performance, thus providing students with the opportunity for correction (Brosvic, Epstein, Cook, & Dihoff, 2005; Peck, Werner, & Raleigh, 2013). These results also emphasize the importance of feedback in improving one's metacognitive awareness as it pertains to academic performance. As Dochy, Segers, and Sluijsmans (1999) suggest, the process of self-assessment can ultimately become a learning tool for students.

The present research attempted to foster increased congruence between student and professor ratings of class participation in two ways. Study 1 was designed to explore whether the use of a detailed grading rubric would result in student grades being congruent with professor grades if both parties used the same behavioral descriptions in order to determine the class participation grade. Utilizing the same detailed grading rubric, Study 2 examined the similarity of student and professor ratings of class participation at both the middle and end of the semester in order to assess whether midterm feedback would result in higher congruence at the end of the semester.

Study 1

Previous research has demonstrated discordance between student and professor ratings of class participation (Burchfield & Sappington, 1999; Gopinath, 1999; Ryan et al., 2007). Thus, Study 1 examined if utilizing a detailed grading rubric for class participation would lead to congruence between student and professor ratings of class participation at the end of the term. This detailed grading rubric not only afforded the students a clearer idea of how participation was being assessed, but also provided the professor with precise guidelines on which to base student grades. As both students and professors would be evaluating participation using the same detailed grading rubric, it was hypothesized that providing both students and faculty with the same objective criteria would yield a positive correlation between student and professor perceptions of class participation.

Method

Participants. Six professors from a small, private university volunteered to be part of the study. Across nine courses, 194 students agreed to participate (79.5% female, 20.5% male). The majority of the students were sophomores and juniors (66.5%), with a mean age of 22.0 years ($SD = 5.89$). The subjects were a convenience sample from introductory (38.2%), intermediate (25.1%), advanced (28.3%), and graduate level courses (8.4%) across the following disciplines: Biology (13.1%), Criminal Justice (4.7%), Education (26.7%), English (8.9%), Philosophy (17.3%), and Sociology (29.3%). All students who were present on days in which data collection took place agreed to participate. Three participants were excluded from analyses due to missing data (i.e., they did not provide a grade for themselves or the professor did not provide a grade for a student).

Materials. This study utilized a grading rubric to assess class participation. The rubric was selected as it provided a detailed description of behaviors related to class participation (Chapnick, 2005) (see Figure 1). These behaviors included level of interaction with peers, consistency of class preparation, depth and relevance of comments, and role in class discussion. Variations in these behaviors were categorized by letter grades (i.e., A+, A, B, C, D, F) that were converted to a numeric scale (i.e., 100, 95, 85, 75, 65, 55) for analyses. This numeric scale was chosen as it reflects point values commonly used in educational settings. Students also provided demographic information such as age, gender, and class status (i.e., freshman, sophomore, junior, senior, graduate student).

A+	A	B	C	D	F
Actively supports, engages and listens to peers (ongoing)	Actively supports, engages and listens to peers (ongoing)	Makes a sincere effort to interact with peers (ongoing)	Limited interaction with peers	Virtually no interaction with peers	No interaction with peers
Arrives fully prepared at every session	Arrives fully prepared at almost every session	Arrives mostly, if not fully, prepared (ongoing)	Preparation, and therefore level of participation, are both inconsistent	Rarely prepared	Never prepared
Plays an active role in discussions (ongoing)	Plays an active role in discussions (ongoing)	Participates constructively in discussions (ongoing)	When prepared, participates constructively in discussions and makes relevant comments based on the assigned material	Comments are generally vague or drawn from outside of the assigned material	Never participates
Comments advance the level and depth of the dialogue (consistently)	Comments occasionally advance the depth of the dialogue	Makes relevant comments based on the assigned material (ongoing)	Group dynamic and level of discussion are not affected by the student's presence	Demonstrates a noticeable lack of interest (on occasion)	Demonstrates a noticeable lack of interest in the material (ongoing)
Group dynamic and level of discussion are consistently better because of the student's presence	Group dynamic and level of discussion are often better because of the student's presence	Group dynamic and level of discussion are occasionally better (never worse) because of the student's presence		Group dynamic and level of discussion are not harmed by the student's presence	Group dynamic and level of discussion are significantly harmed by the student's presence

Figure 1. Participation rubric used in Study 1 and Study 2 (reproduced with permission).

Procedure. Toward the end of the fall semester, following IRB approval, an email was sent to university faculty asking whether class participation contributed to their final course grade. Six faculty who responded affirmatively to that e-mail were invited and subsequently agreed to participate in the study. During the last two weeks of the semester, a member of the research team visited classes taught by participating faculty members to present students with the opportunity to participate; there were no inclusion or exclusion criteria. Data were collected at this time. An informed consent form, indicating that participation in the study was voluntary and would not influence their course grade, was distributed to students. Students and professors were provided with a grading rubric with which to assess class participation. Students were instructed to indicate the letter grade they felt best represented their level of participation in the class over the course of the semester. Professors utilized the same grading rubric to assign class participation grades to each student. Both students and professors provided one overall letter grade based on the five criteria on the rubric. Students and professors were blind to one another's

responses. Congruence of student and professor responses was assessed.

Results

Results indicated a significant moderate correlation between professor and student ratings of class participation ($\rho(189) = .57, p < .001$). Overall, student ratings ($M = 87.02, SD = 7.90$) were significantly higher than professor ratings ($M = 82.85, SD = 12.39$), as indicated by a Wilcoxon Signed-Rank Test ($Z = -5.53, p < .001$). Based on professor ratings, students were separated into “low” and “high” participators using a median split (see Figure 2). There was a significant correlation between student and professor ratings for low participators ($\rho(65) = .45, p < .001$) and high participators ($\rho(122) = .24, p < .01$). For low participators, student ratings ($M = 81.19, SD = 7.74$) were significantly higher than professor ratings ($M = 68.88, SD = 8.34$), as indicated by a Wilcoxon Signed-Rank Test ($Z = -6.64, p < .001$). For high participators, student ratings ($M = 90.16, SD = 5.98$) were similar to professor ratings ($M = 90.40, SD = 6.00$) ($Z = -.19, p = .85$).

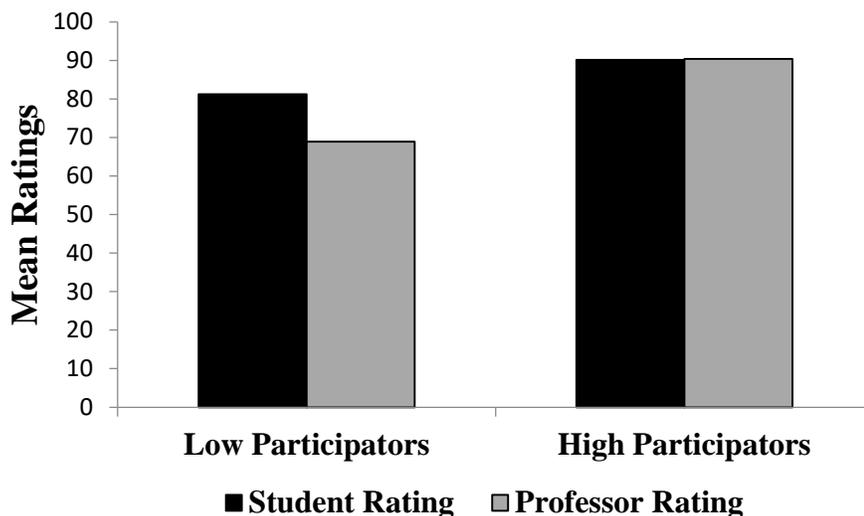


Figure 2. Mean class participation ratings for low ($n = 67$) and high participators ($n = 124$) in Study 1.

Discussion

The use of a detailed grading rubric was intended to eliminate the subjectivity of the grading process. Providing students and faculty with the same detailed grading rubric may have contributed to a moderate correlation between student and professor perceptions of class participation. Consistent with previous research, results indicated a significant mean difference between student and professor ratings, suggestive of a self-serving bias (Myers, 2013). When students were separated into “low” and “high” participators based on professor ratings, this self-serving bias was observed only for “low” participators. An alternative explanation for our findings is a possible cognitive bias in which professors formed an opinion of low participators and graded them more harshly as a result.

As with any research relying on non-random sampling procedures, selection bias is always a potential issue. In this research, participants included faculty from a limited number of disciplines (i.e., Biology, Criminal Justice, Education, English, Philosophy, and Sociology) who weighted class participation in the calculation of final grades and who were willing to participate. For this reason, a double self-selection bias is possible. It should be noted one member of the research team was a participating faculty member. Although she may have had more exposure to the rubric prior to data collection, she was blind to the students' self-assessments of class participation. The researchers do not believe this influenced the interpretation of findings.

Previous research suggests the tendency to self-enhance with regard to self-ratings of class participation seems to be a common practice among undergraduate students (Burchfield & Sappington, 1999; Dancer & Kamvounias, 2005). The question remains, how can we decrease this tendency? Dancer and Kamvounias (2005) found that providing students with formative mid-term feedback from tutors may have had a significant impact on students' final class participation grades. Given this finding, perhaps students' ratings would be more aligned with professor ratings of class participation if students were provided with specific feedback from the professor during the semester, such as a mid-term participation grade. This feedback may help students determine the course of action they need to take for the remainder of the semester if their perceptions are not closely aligned with those of their professor, particularly if students' self-ratings of participation are higher than professor ratings.

Study 2

Employing the same detailed grading rubric utilized in Study 1, Study 2 examined student and professor ratings of class participation at both the middle and end of the semester to determine the impact of mid-term feedback on congruence of student and professor ratings at the end of the term. It was hypothesized that the use of mid-term feedback would increase congruence between student and professor ratings at the end of the term. Specifically, the correlation between student and professor ratings of class participation would be stronger at the end of the term when compared with the correlation of student and professor ratings of class participation at mid-term.

Method

Participants. At the beginning of the semester, three full-time faculty teaching multiple sections of the same course were identified through online course listings and contacted via email. All faculty members who were contacted agreed to participate. Across six sections, 87 undergraduate students agreed to participate (72 females and 15 males; 25% freshman, 69% sophomores, and 6% juniors). The average age of the sample was 20.9 years ($SD = 3.45$). This convenience sample consisted of participants from introductory (42.5%) and intermediate level (57.5%) undergraduate English and Education courses. None of the faculty members had participated in Study 1. While it is unlikely, it is unknown whether any students from Study 2 were participants in Study 1.

Materials. Students and professors used the same detailed grading rubric utilized in Study 1 (see Figure 1). Students also provided demographic information such as age, gender, and class status (i.e., freshman, sophomore, junior, senior).

Procedure. At the midpoint of the semester, students enrolled in one of the two sections

being taught by each faculty member were invited to be part of the study. Students who were contacted at the midpoint served as the Experimental Group ($N = 35$), from whom self-ratings of class participation were obtained (based on the rubric) once at mid-term and again at the end of the term. Students in this group received mid-term feedback (i.e., a letter grade based on the participation rubric) from the professor about their class participation. Students in the Experimental Group were informed that the researchers *may* return at the end of the semester to repeat this process. The other sections of each course served as the Control Group ($N = 52$). Control group sections were contacted toward the end of the semester and faculty and student ratings of class participation were obtained at the end of the semester only. Students in the Control Group did not receive mid-term feedback from the professor about their class participation, and utilized the rubric once at the end of the semester when ratings were assessed. There were no inclusion or exclusion criteria. An informed consent form, indicating that participation was voluntary and would not influence course grades, was distributed to students prior to data collection (i.e., at mid-term for the Experimental Group and end-term for the Control Group).

Results

Correlations. To examine congruence between student and professor ratings of class participation, Spearman Rank-Order Correlations were computed. At the end of the semester, there was a significant correlation between student and professor ratings for the Control Group ($\rho(50) = .42, p < .01$). There was also a significant correlation between student and professor ratings for the Experimental Group at mid-term ($\rho(33) = .51, p < .01$) and at the end of the term ($\rho(33) = .42, p < .05$). A Fisher z transformation revealed there was no significant difference between mid- and end-term correlations for the Experimental Group ($z = .42, p > .05$), which was contrary to the hypothesis.

Mean differences. To explore mean differences in student and professor ratings of class participation, Wilcoxon Signed-Rank Tests were computed. For the Control Group, there was a significant mean difference between student ($M = 92.4, SD = 6.90$) and professor ratings ($M = 88.46, SD = 7.90$) at the end of the term ($Z = -3.31, p < .01$). For the Experimental Group, student ($M = 88.86, SD = 5.70$) and professor ($M = 89.00, SD = 6.94$) ratings were similar at mid-term ($Z = -.26, p = .79$); however, there was a significant mean difference between student ($M = 92.43, SD = 5.86$) and professor ($M = 86.86, SD = 10.15$) ratings at end-term ($Z = -3.21, p < .01$) (see Table 1). In support of previous research, student end-term ratings of class participation were higher than professor ratings for both the Experimental and Control Groups, which contradicted the hypothesis that mid-term feedback would increase congruence. Exploratory analyses of the Experimental Group means demonstrated that students' participation ratings significantly increased from mid- ($M = 88.86, SD = 5.70$) to end-term ($M = 92.43, SD = 5.86$) ($t(34) = -4.28, p < .001$), while professor ratings did not differ significantly from mid- ($M = 89.00, SD = 6.94$) to end-term ($M = 86.86, SD = 10.15$) ($t(34) = 1.46, p = .15$). However, this finding seems to have been driven by low participators. Based on professor ratings, students were separated into "low" and "high" participators at mid-term using a median split. Paired-Samples t -tests indicated that low participators significantly increased their participation rating from mid- ($M = 84.52, SD = 2.18$) to end-term ($M = 90.00, SD = 6.32$) ($p < .001$), while high participators remained consistent in their ratings from mid- ($M = 95.34, SD = 1.33$) to end-term ($M = 96.07, SD = 2.12$) ($p = .16$).

Table 1. Mean class participation ratings for study 2.

	Control Group		Experimental Group	
	Student <i>M(SD)</i>	Professor <i>M(SD)</i>	Student <i>M(SD)</i>	Professor <i>M(SD)</i>
Mid-term	--	--	88.86 (5.70)	89.00 (6.94)
End-term	92.40 (6.90)	88.46 (7.90)	92.43 (5.86)	86.86 (10.15)

Discussion

Unexpectedly, the feedback provided at mid-term did not increase congruence between student and professor ratings of participation at end-term. Student ratings of class participation at the end of the term were significantly higher than professor ratings. Exploratory analyses of Experimental Group means demonstrated that students' participation ratings significantly increased from mid- to end-term, while professors' ratings did not change significantly. However, this seems to have been driven by "low" participators, as this group increased their ratings of participation from mid- to end-term, while "high" participators and professors remained consistent.

One possible explanation for these findings is a potential cognitive bias in which professors formed an opinion of low participating students and their level of participation by the middle of the term and then did not change that opinion despite the students objectively changing their behavior after receiving the mid-term feedback. Conversely, students may have failed to utilize mid-term feedback effectively. Previous research suggests that differences in low- and high-achieving students are associated with a student's level of self-regulation (Kitsantas, 2002; Zimmerman, 2008). Perhaps this indicates a failure to self-regulate on the part of the "low" participators in our study. Future research should examine the effect of providing students with more regular and specific feedback about their participation throughout the semester as this type of feedback may benefit those students who have difficulty self-regulating.

General Discussion

As student engagement is becoming progressively more essential in the classroom (Rocca, 2010), an understanding of the accuracy of a student's self-perception of his or her own class participation can be valuable, particularly in courses where class participation constitutes a significant portion of the student's final grade. The current studies were designed to explore potential practices intended to increase congruence between student and professor ratings of class participation. Specifically, the utility of a shared detailed grading rubric and the addition of mid-term feedback in the form of a letter grade were examined. These two studies revealed three major findings: First, providing students and faculty with the same detailed grading rubric was associated with moderate congruence between student and professor perceptions of class participation. Second, consistent with previous research (e.g., Burchfield & Sappington, 1999; Gopinath, 1999), student ratings were higher than professor ratings, particularly for "low" participators. Third, feedback provided at mid-term did not increase congruence between student and professor ratings of participation at the end of the term, as was initially predicted.

Overall, using a detailed grading rubric that provided students with objective descriptions

of performance standards appeared to produce student self-assessments that were moderately congruent with professor ratings. Additionally, the ratings of both “high” and “low” participators showed significant correlations with professor ratings of class participation. Exploratory analyses of mean ratings demonstrated that students’ ratings of class participation significantly increased from mid- to end-term, while professors’ ratings remained the same. Student ratings were comparable to professor ratings for high participators, indicating that the self-perceptions of these students were more accurate, at least inasmuch as they were consistent with those of the professor. Student ratings were higher than professor ratings for low participators, suggesting that those students may have been self-enhancing with regard to their class participation, possibly the result of a self-serving bias (Myers, 2013) or underdeveloped metacognitive skills.

It is possible that level of class participation may be associated with overall academic achievement. Differences in low- and high-achieving students may be related to a student’s level of self-regulation (Kitsantas, 2002; Zimmerman, 2008), which can be considered under the larger umbrella of metacognitive skills. Metacognition involves the awareness, understanding, and monitoring of one’s cognitive abilities and processes; having an accurate perception of how much one is participating in classroom discussions is an example of a metacognitive skill (Young & Fry, 2008). Perhaps the inflation of one’s level of class participation that is seen particularly in low participators is not self-enhancement, but instead reflects lower metacognitive skills within this group. Flawed metacognitive thinking of poor performing students has been demonstrated in previous research. For example, Kruger and Dunning (1999) asked participants to perform a variety of tasks (e.g., tests of grammar and logical reasoning) and found that poor performing individuals were not aware of how poorly they performed and overestimated how well they performed. One reason suggested for this finding is that less competent students lack the metacognitive skills necessary to accurately assess their performance. Improvements in self-assessment of performance were observed once improvement in participants’ metacognitive skills occurred (Kruger & Dunning, 1999).

Downs (2015) maintains that certain types of feedback to students may be more effective than others. Perhaps receiving only a letter grade with no further explanation or commentary from their instructors at mid-term was not specific enough for students to correct, adjust, or maintain their current level of class-participation behavior. Supplementing the quantitative mid-term feedback (i.e., letter grade) with qualitative feedback might have provided students with additional clarification regarding the quality and relevance of their participation to date. Since students received the letter grade without access to the participation rubric, they did not have the benefit of reviewing the distinctions between their current letter grade and the grade they sought. This may be true, particularly for low participators if, in fact, they have underdeveloped metacognitive skills. Permitting students to review the rubric following mid-term feedback might have enhanced their understanding of their performance. In sum, more substantive feedback may lead to increased congruence between faculty and student ratings at end-term.

Limitations

A potential criticism of Study 1 was the lack of a control group for the purpose of establishing a baseline of congruence between student and professor ratings of class participation. A true baseline could have been established with the inclusion of a group that provided self-ratings at the end of the semester without the use of the detailed rubric. The use of a control group was implemented in Study 2, thus providing a point of comparison.

As previously noted, the classes used in this research were obtained through convenience sampling; faculty self-selected to participate, potentially creating a sampling bias of either faculty or student type, or both. Ideally, use of a random sample of classes where faculty do not self-select to participate could be utilized in future studies of this nature. Additionally, the authors did not know how much class participation contributed to the final course grade in each of the respective classes. The weighting of class participation as part of the final course grade may influence how seriously one evaluates it. This leads to the question, how seriously did students take the exercise? Furthermore, as participation in this research did not have an impact on their final course grade, students may not have attributed much value to the exercise, also leading one to question how seriously they treated it.

Although the use of a detailed grading rubric was intended to eliminate the subjectivity of the grading process, it is possible that some degree of interpretation on the part of each faculty member may have occurred. Ideally, inter-rater reliability would be established prior to application of the rubric; in the current studies, inter-rater reliability was not established. To ensure consistent application of the rubric, an optimal design would involve two instructors responsible for teaching the same course (i.e., the same students). As co-teaching is gaining popularity in academia, perhaps inter-rater reliability could be established in the future by utilizing the team teaching model (Friend & Cook, 2017).

Future Research

Modifying the type of feedback provided to students about their class participation may aid in increasing congruence between self- and professor-ratings of student performance. Providing students with a “grade” for their participation that is accompanied by either an explanation or commentary from their instructor at mid-term may increase self-awareness and, as a result, improve their ability to regulate and adjust their current level of class participation. Future research could also examine the effect of providing students with more regular feedback about their participation throughout the semester, for example, providing formal or informal feedback on a weekly basis, as suggested by Zaremba and Dunn (2004). As academic self-enhancement is not particularly beneficial for students in the long-term, future research could shift the focus from increasing congruence between student and professor ratings to examining how self-regulation and metacognitive skills can be further developed or improved in low participating students.

References

- Brosvic, G., Epstein, M., Cook, M., & Dihoff, R. E. (2005). Efficacy of error for the correction of initially incorrect assumptions and of feedback for the affirmation of correct responding: Learning in the classroom. *Psychological Record, 55*(3), 401-418.
- Burchfield, C. M., & Sappington, J. (1999). Participation in classroom discussion. *Teaching of Psychology, 26*(4), 290-291.
- Chapnick, A. (2005). A participation rubric. *The Teaching Professor, 19*(3), 4-5.
- Dancer, D., & Kamvounias, P. (2005). Student involvement in assessment: A project designed to

assess class participation fairly and reliably. *Assessment & Evaluation in Higher Education*, 30(4), 445-454. <https://doi.org/10.1080/02602930500099235>

Dochy, F., Segers, M., & Sluijsmans, D. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education*, 24(3), 331-350.

Downs, S. D. (2015). Testing in the college classroom: Do testing and feedback influence grades throughout an entire semester? *Scholarship of Teaching and Learning in Psychology*. Advance online publication. <https://dx.doi.org/10.1037/stl0000025>

Friend, M., & Cook, L. (2017). *Interactions: Collaboration skills for school professionals* (8th ed.). New York, New York: Pearson.

Gopinath, C. (1999). Alternatives to instructor assessment of class participation. *Journal of Education for Business*, 75(1), 10-14. <https://doi.org/10.1080/08832329909598983>

Kitsantas, A. (2002). Test preparation and performance: A self-regulatory analysis. *The Journal of Experimental Education*, 70(2), 101-113. <https://dx.doi.org/10.1080/00220970209599501>

Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121-1134.

Myers, D. G. (2013). *Social Psychology* (11th ed.). New York, NY: McGraw-Hill.

Peck, S. D., Werner, J. L. S., & Raleigh, D. M. (2013). Improved class preparation and learning through immediate feedback in group testing for undergraduate nursing students. *Nursing Education Perspectives*, 34(6), 400-404. <https://doi.org/10.5480/11-507>

Rocca, K. A. (2010). Student participation in the college classroom: An extended multidisciplinary literature review. *Communication Education*, 59(2), 185-213. <https://doi.org/10.1080/03634520903505936>

Ryan, G. J., Marshall, L. L., Porter, K., & Jia, H. (2007). Peer, professor, and self-evaluation of class participation. *Active Learning in Higher Education*, 8(1), 49-61. <https://doi.org/10.1177/1469787407074049>

Young, A., & Fry, J. D. (2008). Metacognitive awareness and academic achievement in college students. *Journal of the Scholarship of Teaching and Learning*, 8(2), 1-10.

Zaremba, S. B., & Dunn, D. S. (2004). Assessing class participation through self-evaluation: Method and measure. *Teaching of Psychology*, 31(3), 191-193.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166-183. <https://doi.org/10.3102/0002831207312909>