# Conditional Release of Course Materials: Assessing Best Practice Recommendations

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## Abstract

With advances in learning management systems and online course delivery methods, teachers have a variety of options to control the release of course content based on specific criteria. Despite the availability of such conditional release tools, very little research has assessed student perceptions and experiences with these tools. In a 2011 article, Gardner, Fisher, Raffo, and Brinthaupt put forward a number of best practice recommendations to guide the implementation of conditional release tools. This paper reports on the authors' evaluation of several of those recommendations through a survey of undergraduate student perceptions of the use of conditional release in their courses. The results of the study provide support for the recommendations, with students reporting positive evaluations of and experiences with the conditional release tool. In addition, students with lower overall grades reported being more engaged in the courses compared to those with higher overall grades. Implications of these results for the strategic use of conditional release of course content are presented.

**Keywords:** conditional release, learning management system (LMS), scaffolding, best practices, student perceptions, online pedagogy, content mastery

**Introduction**

> If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print. (Thorndike, 1912, p. 165)

The "mechanical ingenuity" that Thorndike envisioned is now available in a tool called conditional release. Conditional release of course content allows teachers to control student access to material until certain conditions or criteria have been met.

According to Gardner, Fisher, Raffo, and Brinthaupt (2011), conditional release refers to "efforts to make course content available based upon specific student behavior, activities, or achievements" (p. 3). Gardner et al. note that conditional release can be action-based, achievement-based, or teacher-controlled. Well-designed conditional release activities can help teachers manage how students proceed through a course, provide flexible delivery of course content, and facilitate scaffolding efforts to support students.

Conditional release works particularly well for courses that have a linear progression in which new content builds upon previous content. These kinds of courses allow the teacher to require an acceptable level of mastery before moving to the next content. Rogers (2002) made a distinction between interim (smaller) and terminal (major) academic failures. He notes that interim failures can serve as opportunities for learning experiences (see also Yorke, 2004). Conditional release provides a mechanism for imposing an interim failure, when needed, which can allow the student to re-examine content in an effort to achieve ultimate success.

One of the primary goals of flexible learning is to help students integrate educational opportunities into their lives, despite their sometimes hectic schedules. As Hill (2006) argued, flexibility can include variations in what, when, where, and how content is delivered, as well as address differences in student approaches to learning. One advantage of flexible delivery is that students can bypass material that they have already mastered while being forced to slow down and achieve an acceptable level of success for other content (Smith, 2008). Conditional release provides a means of managing this flexibility. Conditional release can also be used to create the flexibility needed to help students who, for whatever reason, have fallen behind in a course. Instead of simply taking exams for which they are not prepared, accepting the consequences, and continuing with the course, with the click of a mouse a teacher can assign content to be completed prior to making the assessment available. This gives students an opportunity to complete missed work, master the necessary content, and continue successfully through the course.

According to Hammond and Gibbons (2001), *scaffolding* refers to "support that is designed to provide the assistance necessary to enable learners to accomplish tasks and develop understandings that they would not quite be able to manage on their own" (p. 15). Conditional release allows teachers to make content accessible to some or all students depending on their comfort level with that content. By controlling the release of course content, teachers can also implement intermediate assignments to assess student success. Using conditional release to provide scaffolding in this manner allows students to progress as they are successful, but blocks them from access to course content for which they do not have an appropriate skillset for understanding, until they gain and demonstrate those skills or knowledge.

There is an extensive literature on intelligent learning systems (Abell, 2006), intelligent tutors/agents (e.g., Aleven, McLaren, Sewall, & Koedinger, 2009; VanLehn, 2006), and adaptive learning environments (e.g., Najjar, 2008). These systems permit complex, individualized tutoring and scaffolding for a variety of learning tasks. Conditional release tools offered by learning management systems provide similar means to guide students through course content. However, these conditional release tools are less complex and less individualized than the tutoring systems.

Most of the literature on conditional release focuses on the technical applications of the tool rather than the kinds of pedagogical or student learning issues just discussed. For example, a teaching guide for using the Desire2Learn learning management system advises teachers implementing the conditional release tool to "avoid circular references, unnecessary conditions, and impossible and contradictory conditions, and to establish conditions before students access the course" (Desire2Learn, 2008, pp. 112-113). Help resources from Deakin University (2011) in Australia direct teachers to use conditional release to ensure that students read specific course content or post to a discussion forum before they

move on to more content, attempt to complete a quiz, or submit an assignment to the dropbox. A press release from Blackboard notes that "through the use of Adaptive Release, … instructors will be able to control, monitor and create assignments according to their evolving student assessment and criteria" (Blackboard, 2008, para. 6).

These usage suggestions do not appear to be tied to specific pedagogical approaches or the actual practices of teachers. Hall and Williams (2012) moved beyond the technical applications of conditional release. In a review of the implications of conditional release and intelligent tutors for graduate management education courses, they indicated that conditional release systems could be helpful to students by offering self-paced learning that could be completed at a time and place that was convenient for the student. Conditional release could also be used to provide progressive learning development and facilitate the delivery of "bite-size" knowledge constructs. They also noted that conditional release could be used to help students with making up missed course requirements. In another pedagogical application of conditional release, Irwin, Hepplestone, Holden, Parkin, and Thorpe (2013) suggest that feedback about performance be separated from the grade on an assessment. In their case study, they released grades only after students had received feedback and developed an action plan for future assessments. The current study differs from these approaches in that conditional release requires students to demonstrate mastery of content before moving further through the course.

In his book *What the Best College Teachers Do*, Bain (2004) focused on teacher attitudes, beliefs, and behaviors that influence student outcomes. Applying Bain's findings to the context of online teaching and learning, Brinthaupt, Fisher, Gardner, Raffo, and Woodard (2011) identified three important factors that outstanding teachers possess: fostering student engagement, stimulating intellectual development, and getting personal with students. Using these factors and a set of case studies of courses that incorporated conditional release with online classes, Gardner et al. (2011) developed six best practice recommendations.

First, *conditions for release should be reasonable and realistic*. Specifically, they recommended setting achievement-based release at the minimum level for passing. When higher levels of achievement were desirable, setting the condition for release at those levels tended to create impenetrable barriers for low-performing students. Second, *conditional release is best used with activities or assignments that lead to the mastery of course content.* In Gardner et al.'s (2011) case studies, teachers typically allowed students to repeat assignments until the release condition was met. The authors recommended using conditional release as a way to prepare students for authentic assessments that address learning outcomes. Third, *conditional release is best used when course content progresses linearly or builds on itself.* The authors suggested that if there is a specific sequence that is required for students to progress through the course, then teachers and students can benefit from the effective use of conditional release. If, however, the course material can be presented in a different order without negatively impacting student learning, then conditional release may be less necessary.

Gardner et al.'s (2011) fourth best practice recommendation for using conditional release was that *the reasons for using conditional release and for using specific release criteria must be transparent and clearly communicated to students.* It is particularly important with achievement-based conditional release that teachers stress to students that mastery of earlier content is essential for later course success. Fifth, *teachers who use conditional release need to be flexible.* Gardner et al. suggested that teachers may need to alter or adjust both the conditions and the deadlines as the course progresses. Inflexibility can create barriers and penalties or negatively impact motivation in ways that hurt student learning. Finally, *conditional release is best used with caution.* The authors recommended that conditional release be targeted toward only the most critical tasks for ensuring mastery of course content. Overusing conditional release may decrease its effectiveness and lead to frustration in students who feel micro-managed by their teachers for no clear purpose.

In the present study, the role of the conditional release tool in fostering student engagement and stimulating intellectual development is examined. In particular, conditional release can hold students accountable and prevent them from developing shortcuts to completing class activities without engaging in the material or meeting student learning outcomes. The proper use of conditional release will help students to master course content and encourage or require them to be more strongly engaged with the course materials, activities, and assessments. Students who are already sufficiently engaged, self-motivated, or have high overall grades should be less likely to encounter or be affected by the conditional release requirements.

To date, the Gardner et al. (2011) best practice recommendations have not been examined by systematically assessing student perceptions of and experiences with conditional release. In this study, students enrolled in both face-to-face (F2F) and online classes that implemented conditional release were surveyed. The major focus of this research was to assess student feelings regarding the use of conditional release, the perceived impact that it had on their success in the class, and their perceptions of how the amount of work they completed in the class was influenced by the use of conditional release.

Because the classes used in this study followed the best practice recommendations generated by Gardner et al. (2011), students were expected to have positive experiences and favorable evaluations of the use of conditional release in their courses. Based on the scaffolding features of conditional release as well as previous research (e.g., Tuckman, 2007), students with lower overall grades were also expected to benefit more from the use of conditional release than students with higher overall grades. All of the best practice recommendations were assessed except for the third one (that conditional release is best used when course content progresses linearly or builds on itself).

**Method**

*Participants*

Two of the authors surveyed undergraduate students in their courses over two semesters. Students enrolled in three different courses were included in the study. There were two sections of an online upper division (third- or fourth-year) agricultural economics course, three sections of an online general education college algebra course, and three traditional (F2F) sections of a lower-division (first- or second-year) elective mathematics course for at-risk students. Of the 184 students in these classes, 69 (46 women, 18 men, five missing) completed surveys representing a response rate of 38%. Of these students, 24 were enrolled in the online algebra course, 23 in the traditional elective mathematics course, 14 in the online agricultural economics course, and eight did not indicate their course. Class breakdown showed that the respondents represented a cross-section of year in school: first year (44%), second year (16%), third year (18%), and fourth year (22%). Eighty-two percent of respondents reported that this was the first time they had taken a course that used conditional release.

Students who completed the survey self-reported their high school and current college grade point average (GPA). The mean high school GPA for those responding ($n = 52$) was 3.21, with a standard deviation of 0.40. The mean college GPA for those responding ($n = 35$) was 3.38, with a standard deviation of 0.49. The average number of fully online courses that respondents had taken was 3.67, the standard deviation being 5.02 ($n = 56$). The mean age of respondents was 25.93 years, with a standard deviation of 8.55 ($n = 59$).

*Materials*

In addition to the demographic questions described earlier, respondents rated a series of items pertaining to the use of conditional release in their course, their experiences with and perceptions of conditional release, and their recommendations for changes to its use. These items included several pertaining to the release conditions employed in the course (e.g., whether they were reasonable, should have been set higher or lower, and were clearly communicated to the students). In addition, students rated whether or not the teacher was flexible about deadlines, how the use of conditional release affected the amount of work they did in the course and the grades they received, their difficulty in meeting the release criteria, and their preferences about their teacher's use of conditional release. The study received Institutional Review Board approval.

Students rated all items using a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). They also were given a *not applicable* option. In addition, students answered an open-ended question about their general impressions (positive or negative) of the use of conditional release in the course. Approximately 3 weeks before the end of the term, class instructors made the survey link available to their classes and encouraged students to complete it anonymously. Students did not receive extra course credit for their participation, and they were informed that their grades would not be affected by whether or not they participated. After approximately 1 week, instructors sent a reminder asking students to complete the survey if they had not already done so. Students completed the survey during the semester so that they rated conditional release while they were still experiencing it and so that their final grades would be less likely to affect their evaluation of the tool.

*Conditional Release Procedure*

Since conditional release is presumed to work best for courses where activities lead to mastery of course content and the content must progress linearly (Gardner et al., 2011), the authors chose two lower-division mathematics courses and one upper-division agricultural economics course that fit the conditional release implementation criteria. The courses required students to successfully complete homework or master mathematical concepts before taking exams. In addition, all of the classes are designed with a linear progression in mind. For example, after first learning about supply and demand, agricultural economics students learn how supply and demand interact to create a market equilibrium, then use the market to conduct welfare analysis and analyze international trade. Mastery of earlier content is essential for later success in the course. Figure 1 shows a schematic representation of a student's progression through the content.
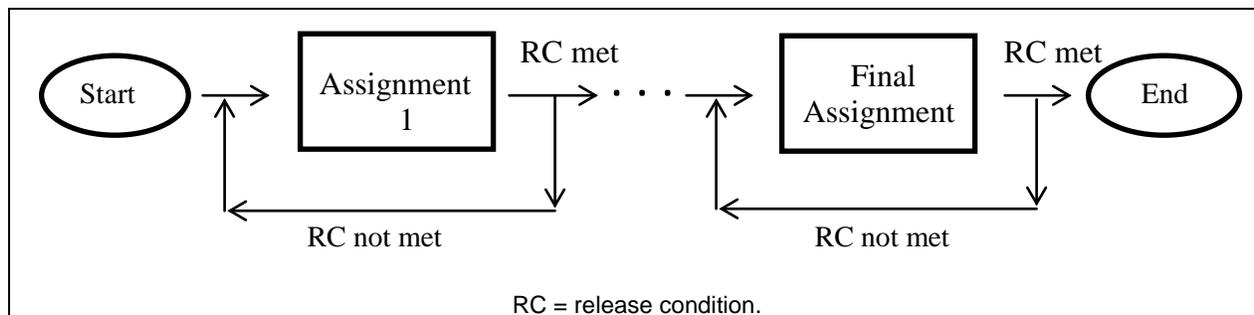


Figure 1. *A simple conditional release schematic representation*

In all courses, the release conditions closely followed the Gardner et al. (2011) best practice recommendations. Students in the courses had specific deadlines for all quizzes and homework. The teachers set release conditions at 60% for all assignments. However, they encouraged their students to master the content by doing better than the minimum. The release conditions meant that students needed to score 60% or higher for all assignments by the deadline in order to progress to the next assignment. Students who failed to meet the release condition by the deadline worked with their teacher on how they could best meet that condition (e.g., extended deadline, additional help, tutoring) and move to the next assignment. In other words, in order to be successful, students needed to first demonstrate sufficient mastery of the prerequisite material before moving forward through the course content. For the online agriculture course, the teacher used minimal release conditions for students to access course content. Students were not required to visit individual content items in order to release quizzes and exams. In this manner, conditional release was not used to micro-manage students. Those choosing not to view content before beginning an assessment (e.g., a quiz or an exam) could still take that assessment. However students did have to pass each assessment before they could move on to the next one. After all of the quizzes in a module were complete, the section exam would become available. In other words, the release criterion was based on students' performance, rather than on their preparation.

In the online mathematics course, progress was more tightly managed by the teacher, with all homework, quizzes, and tests subject to conditional release. For example, a student could not proceed to homework assignment 2 until homework assignment 1 was successfully completed. In all the online courses, students received a complete list of assessments required for the class and the deadlines associated with them. Prior to starting the classes, teachers planned for "soft" deadlines so that students who did not trigger the release conditions would have flexibility. This was accomplished by announcing a deadline and granting manual exceptions when necessary. When granting exceptions, teachers counseled students, encouraging them to go back and complete quizzes, offering help, and warning them that they were behind and needed to catch up if they intended to complete the course successfully.

A less-flexible approach to conditional release worked well in the online classes because those classes were designed to be completed asynchronously. However, in the synchronous traditionally delivered classes, the teacher needed to be more flexible. Because students in the latter courses needed to move through it at the same pace, some students needed to be allowed to proceed without meeting all release conditions. Although conditional release was still pervasive throughout the course, students could take a section exam and then move to the next material regardless of whether they had met all the release

conditions from the previous section. Students still had access to the material from previous sections and could continue to work until they mastered that material. In other words, teachers required students in the online courses to meet all of the release conditions, whereas the synchronous nature of the traditional course required that the teacher waive some release conditions for students.

**Results**

Students in the classes completed surveys to determine their perceptions of the use of conditional release in the courses. To analyze these responses and test the hypotheses, a variety of strategies were employed. First, the extent that students agreed or disagreed with the survey items was assessed. Next, the relationships among the various survey items were examined. Finally, a regression analysis was conducted that examined the factors that predicted students' perceptions of how conditional release helped them to master the course content.

Table 1 shows summary statistics for students' assessment of the release conditions and criteria. Because there was no control group in this study, one-sample *t*-tests were relied upon. The *t*-tests assessed whether student responses differed significantly from the scale midpoint and indicated the extent to which students agreed or disagreed with various components of conditional release as it was implemented in their courses.

Consistent with the best practice recommendation that conditions for release should be reasonable and realistic (Gardner et al., 2011) students agreed that the 60% release criterion was reasonable (75% of students chose either the *agree* or *strongly agree* response option). They neither disagreed nor agreed with the statement that the release condition should be higher. However, they disagreed with the statement that the release condition should be lower than 60% in their course (65% of students chose either the *disagree* or *strongly disagree* response option). Furthermore, students tended to disagree that they were having a difficult time meeting the release criteria for the course (62% of students chose either the *disagree* or *strongly disagree* response option) and to disagree or feel neutral about whether they would prefer that their teacher did not use conditional release in their course (only 11% of the students chose the *agree* or *strongly agree* response option for this item).

Table 1. *Assessment of release conditions and criteria*

| Item | *M* | *SD* | *n* |
|---|---|---|---|
| A release condition of 60% is reasonable for this course. | 3.88*** | 0.95 | 67 |
| The release condition for this course should be higher than 60%. | 3.05 | 1.14 | 65 |
| The release condition for this course should be lower than 60%. | 2.23*** | 0.97 | 66 |
| I am having a difficult time meeting the release criteria in this course. | 2.33*** | 0.96 | 67 |
| I would rather that the teacher didn't use conditional release in this course. | 2.57*** | 1.00 | 67 |

*Note. N* = 69. Sample size varied slightly across items because of missing data or rating the item as *not applicable*; means were tested against the midpoint of the scale (3 = *neither disagree nor agree*).
***$p$ < .001.

Table 2 provides information about the students' perception of the impact of conditional release on content mastery. The students tended to agree more than disagree that conditional release was helping them to master the course content (74% of students chose either the *agree* or *strongly agree* response option) and increasing both their learning (51% of students chose either the *agree* or *strongly agree* response option) and current grade in the course (49% of students chose either the *agree* or *strongly agree* response option). Note that, in Table 2, all of these means were statistically different from the scale midpoint. These results show that students clearly held favorable views of the use of conditional release and support the best practice recommendation that conditional release is best used with activities or assignments that lead to mastery of course content (Gardner et al., 2011).

Table 2. *Impact of conditional release on content mastery*

| Item | M | SD | n |
|---|---|---|---|
| Conditional release is helping me to master the course content. | 3.86*** | 0.84 | 66 |
| I am learning more than I would have if conditional release was not used in this course. | 3.40** | 1.08 | 68 |
| I feel that my current grade is higher in this course because of conditional release. | 3.34** | 1.12 | 67 |

*Note.* Means were tested against the midpoint of the scale (3 = *neither disagree nor agree*).
**$p < .01$. ***$p < .001$.

Table 3 indicates student responses to the teacher's role in the use of conditional release in their courses. These data show that the students felt that their teachers clearly communicated the release conditions (86% of students chose either the *agree* or *strongly agree* response option) and that their teachers were flexible if the students missed deadlines (75% of students chose either the *agree* or *strongly agree* response option). Additionally, students did not feel that their teachers were controlling their progress through the course too much with the use of conditional release (67% of students chose either the *disagree* or *strongly disagree* response option). These results indicate that the teachers effectively implemented the best practice recommendations of communicating reasons and criteria clearly to students, being flexible with students as needed, and cautiously using conditional release on critical assignments (Gardner et al., 2011).

Table 3. *Teacher's role in use of conditional release*

| Item | M | SD | n |
|---|---|---|---|
| The release conditions in this course were clearly communicated to me by the teacher. | 4.34*** | 0.95 | 67 |
| The teacher has been flexible if a deadline was missed on an assignment that was conditionally released. | 4.16*** | 0.92 | 57 |
| By using conditional release, the teacher is controlling my progress too much in this course. | 2.26*** | 0.97 | 66 |

*Note.* Means were tested against the midpoint of the scale (3 = *neither disagree nor agree*).
***$p < .001$.

Table 4 reports the data pertaining to the effects of conditional release on student engagement. Interestingly, students neither disagreed nor agreed that they would have been less likely to complete course work prior to taking exams if conditional release had not been used and that conditional release was making them do more work in the course than if it had not been used. However, they did tend to agree that conditional release had forced them to be more organized in their course studying (56% of students chose either the *agree* or *strongly agree* response option). These results suggest that the current use of conditional release did not have a strong effect on students' engagement in their courses.

Table 4. *Effects of conditional release on engagement*

| Item | M | SD | n |
|---|---|---|---|
| If the teacher did not use conditional release, I would be less likely to complete the homework/quizzes before taking the exams. | 2.94 | 1.30 | 67 |
| The use of conditional release is making me do more work for this course than I would have if there was no conditional release | 2.97 | 1.30 | 68 |
| The use of conditional release has forced me to be more organized in my studying in the course. | 3.43** | 1.23 | 68 |

*Note.* Means were tested against the midpoint of the scale (3 = *neither disagree nor agree*).
**$p < .01$.

In addition to examining student evaluations of conditional release, the relationship of students' college GPAs to their evaluations of the conditional release items was assessed. These analyses showed that as student GPA decreased, there were increases in the likelihood of agreeing that the use of conditional release was making them do more work in the course ($r(31) = -.61$, $p < .001$) and that they would be less

likely to complete homework and quizzes prior to taking exams if conditional release had not been used ($r$(31) = -.44, $p$ < .001). Lower GPAs were also associated with higher levels of agreement with items pertaining to learning more in the course due to the use of conditional release ($r$(31) = -.52, $p$ < .001), having a higher grade in the course due to the use of conditional release ($r$(31) = -.49, $p$ < .001), and forcing the students to be more organized in their studying for the course ($r$(31) = -.44, $p$ < .001. No significant relationship was found between GPA and conditional release helping the students to master the course content. In addition, there were no significant relationships between high school GPA and the conditional release measures. Overall, these results suggest that conditional release helped lower-performing students to be more engaged in the course compared to higher-performing students.

Other correlational results showed that students who felt that conditional release was helping them to master the course content were less likely to have difficulty meeting the release criteria ($r$(65) = -.24, $p$ < .05), showed less of a preference that the teacher did not use conditional release ($r$(65) = -.59, $p$ < .001), and were less likely to think that their teacher was controlling their course progress too much with conditional release ($r$(64) = -.40, $p$ < .01). Not surprisingly, students who reported having more difficulty meeting the release criteria showed a greater preference that the teacher did not use conditional release in the course ($r$(67) = .53, $p$ < .001) and were less likely to agree that the teacher clearly communicated the release conditions ($r$(66) = -.37, $p$ < .01).

In addition to these correlations and the information from the *t*-test analyses, an ordered probit model was estimated in order to test the effectiveness of various aspects of conditional release with respect to the extent that it helped students to master the course content. This analysis permits the simultaneous consideration of several variables to predict participant responses to the course content mastery question. The items closest to the Gardner et al. (2011) best practice recommendations (i.e., 60% release condition was reasonable, clear communication about release conditions, flexible deadlines, controlling course progress) were included as explanatory variables in these models. In addition, previous conditional release experience was included in the models. The overall model was significant, $X^2$ = 23.04, $p$ < .05, with two items emerging as significant predictors of perception of course content mastery. The items were the 60% release condition criterion (β = 0.427, $SE$ = 0.197, $p$ < .05) and teacher deadline flexibility (β = 0.489, $SE$ = 0.213, $p$ < .05). This result suggests that when students felt that the release conditions were reasonable and that the professor was flexible, they were more likely to report that conditional release helped them master the course content.

Finally, the students' open-ended responses to the question about their general positive or negative impressions of the use of conditional release in their course were analyzed. Thirty-four participants answered this question. Four raters independently coded each response in terms of its overall positivity or negativity. The raters used a 4-point scale (1 = *mostly positive*, 2 = *neutral/both positive and negative*, 3 = *mostly negative*, and 4 = *not applicable*). Based on the free-marginal estimation procedure (Randolph, 2008), the coders showed acceptable inter-rater reliability, with a kappa of .79. Each of the four raters contributed an approximately equal number of participants to the final coding. Data from four students who gave responses that were not applicable to the question were omitted, resulting in a final sample of 30. These data indicated that 70% of respondents had mostly positive impressions of conditional release, 27% had neutral or both positive and negative impressions, and 3% (1 person) had a mostly negative impression of the use of conditional release. Sample positive responses included *"I personally liked the conditional release because it actually improved my grade by making me try harder and understand the problems"* and *"Conditional release has helped me in the class to keep things organized."*

**Discussion**

This is the first published study that investigates the use of conditional release as a pedagogical tool. The results provide strong empirical support for the conditional release best practice recommendations proposed by Gardner et al. (2011). Following these recommendations, both teachers chose courses that progressed linearly and used conditional release with activities that they believed led to the mastery of the course content.

With respect to Gardner et al.'s (2011) first best practice recommendation, the student ratings indicated that the conditional release criteria used by the teachers were appropriate. In particular, a minimal passing grade seems to be an appropriate threshold for conditional release, at least for courses of this nature. Students responded well to the 60% threshold and thought that it was reasonable and realistic. The results showing that students believed that conditional release helped them master the course

content suggest that the teachers did choose assignments that would lead to mastery if completed. This provides support for Gardner et al.'s second recommendation. Students also tended to agree more than disagree that their learning and grades in the course were higher with the use of conditional release than if their teachers had not used it. If, as students reported, conditional release helped them to be more organized, this might be one reason why their learning and grades benefitted from its use.

Students also indicated that the teachers in these courses clearly communicated about conditional release and were willing to be flexible when necessary. These results indicate that the implementation of conditional release in this study was consistent with Gardner et al.'s (2011) best practice recommendations four and five. Although teachers may be concerned that implementing conditional release will cause their students to feel that their progress through the course is too controlled, this was not the case in the current study. In fact, students reported that they preferred that their teachers use conditional release in their classes, rather than not use it. One reason for this may be that many students like clear-cut deadlines and expectations in a course. Whereas conditional release is probably not necessary or appropriate for all courses, it did work well for the sequential-content courses used in this study.

Finally, the data did not permit a direct examination of Gardner et al.'s (2011) sixth best practice recommendation that conditional release be used with caution. However, students disagreed that the use of conditional release led to their teachers controlling their progress too much in their courses. In addition, none of the results suggested that the teachers overused conditional release or that the use of conditional release caused students to feel micro-managed in their learning. Similarly, there was no evidence that students felt frustrated by the use of conditional release in their courses.

Whereas students agreed that conditional release helped them to increase their mastery of content, learning, and grade, they were neutral regarding whether the amount of work they did or their likelihood of completing assignments was affected by conditional release. One possible explanation for this pattern of results is that conditional release would remain virtually "invisible" for students if they did not encounter a condition that kept them from moving forward in the course. If they encountered a release condition, students would need to redo their work to pass the condition, which should add to their perception of doing more work. Otherwise, conditional release did not require them to do anything that they would not have done otherwise. Although the learning management system did not permit an examination of the frequency with which students encountered a release condition, future research assessing how the frequency of release encounters relates to course experiences and perceptions would be very interesting.

It was expected that, if it is properly structured and implemented, conditional release would help to foster student engagement and stimulate intellectual development (Bain, 2004; Brinthaupt et al., 2011). There was good support for this expectation. The overall results showed that students felt that conditional release helped them to master the course content, learn more, and get higher grades compared to if it had not been used. The GPA results showed that conditional release particularly helped lower-performing students to be more engaged in the course (as reflected in their learning, grades, and organization) compared to higher-performing students. There was no evidence that the use of conditional release negatively affected the engagement or motivation of students with high GPAs. As expected, as GPAs increased, the effects of conditional release on learning and grades decreased. Overall, these results suggest that conditional release can be an effective pedagogical tool.

Because the conditional release tool is available with most learning management systems, there is no additional monetary cost. However, as with the use of any new instructional technology or methodology, learning how to use this tool can take time and effort for instructors. They may face a trial-and-error process to work through appropriate parameters for the use of conditional release to both run smoothly and be aligned with the learning objectives for their course. However, despite these preliminary challenges, the benefits of conditional release appear to outweigh the instructor costs.

In summary, a conditional release tool is available in many learning management systems today. Conditional release particularly helped lower-performing students to be more engaged in the course, but without a negative impact on students with higher GPAs. These observations would indicate that the appropriate use of conditional release in certain classes might have a positive impact on retention in higher education, particularly of lower-performing students.

**Limitations and Implications**

Despite the support for the use of conditional release and the validity of the Gardner et al. (2011) best practice recommendations, there were some limitations to the present study. First, the small sample sizes and the specific courses used in this study potentially limit the generality of the results. The three courses chosen for the study were primarily mathematics-related. Although this choice follows the best practice recommendations, it is unclear whether a similar pattern of results would hold for other kinds of courses, such as those that progress linearly but are not mathematics-oriented or those that do not progress linearly. In addition to studying other kinds of courses, the use of conditional release with graduate students would be an important extension of this research. It is possible, for example, that conditional release would be seen more negatively by graduate compared to undergraduate students.

Another limitation of the study is that the data relied on student self-reports of their perceptions of conditional release and GPAs. While it is important to know what students think about its use, it is essential that future research measures the effects of conditional release on actual content mastery and engagement with course materials. There are some learning management system tools that could provide some data along these lines.

Rather than asking students about their perceptions of mastery and engagement, researchers could compare performance on course activities and assessments for students enrolled in classes that did and did not use conditional release. Additional research could examine the impact of conditional release on content mastery and engagement for specific student populations and types of courses (e.g., first-year, at-risk, transfer, or graduate students; honors, general education, or upper division courses).

Of course, the best way to test best practice recommendations is to systematically vary the use of conditional release and assess its effects. For example, researchers could vary whether students do or do not receive information about why conditional release is being used. The extent to which teachers need to be transparent about and clearly communicate the reasons for the use of conditional release could then be demonstrated. With respect to what performance levels are most reasonable and realistic for conditional release, researchers could conduct more systematic assessments of different conditional release criteria (e.g., 25%, 50%, 60%, 80%) and measure student experiences and perceptions. It would also be important for researchers to compare student performance and experiences in the same courses that do and do not use conditional release. A greater focus on the effects of conditional release with different student populations would also be interesting. Research to test some of these possibilities is currently planned by the authors.

From the perspective of the teacher or course designer, there are ways to assess the adequacy of a conditional release implementation. A listing of the six best practice recommendations from Gardner et al. (2011) should be used to guide one's use of conditional release. Additionally, a rubric based on more detailed consideration of these best practices could be developed to aid teachers in implementing this tool.

A final point concerning conditional release is to note its conceptual similarity to educational gaming. A common gaming strategy is scaffolding that requires players to demonstrate some degree of mastery in order to access additional levels of the game (e.g., McClarty et al., 2012; Vogel et al., 2006). With its emphasis on mastery of course materials prior to taking assessments or moving on to later modules, students who are part of the digital generation should understand and be familiar and comfortable with conditional release (Palfrey & Gasser, 2008). It is conceivable that, if it is creatively designed and executed, conditional release could capitalize on some of the advantages of gaming.

With respect to the general issue of the integration of new instructional technologies, a strategy similar to that reported in this paper could be used. In particular, when a new tool is developed, researchers should first develop best practices for the use of that tool. Then, research assessing the accuracy and adequacy of those best practices can be conducted. Finally, revisions to best practice recommendations can be made based on empirical findings.

In summary, the present study provides encouraging results for the use of the conditional release of course materials. Despite this support, many questions remain about the range of application for and the potential limitations of conditional release. However, in order to generalize these findings, additional research should focus on different types of institutions, disciplines, student populations, and course levels utilizing conditional release. Future research that systematically examines the range of effectiveness and practical or pedagogical limitations of conditional release is clearly warranted.

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