Adapting Exam Wrappers to a Prescription Rubric in a One-semester Skills Lab Course

Lauren M. Caldas, PharmD, Abigail T. Matulewicz, PharmD, Teresa M. Salgado, MPHarm, PhD, Jacob F. Ellerbrock, PharmD Candidate, Laura M. Morgan, PharmD, ME Virginia Commonwealth University School of Pharmacy, Richmond, VA

BACKGROUND

Exam wrappers are a commonly used student self-reflection tool implemented by many universities.1-3 The format of the wrappers are: (1) ask students to reflect on their preparation for the exam, (2) consider the source(s) of error during the exam, and (3) develop a plan for improvement for future exams.3 This practice incorporates exam(s) into the learning process.

In a first-year Fall Skills Lab course, students prepare 9 prescriptions which are assessed using a rubric evaluating four categories: product, label, calculations, and legal components of the prescription. The rubric assigns the grade of pharmacist (P), student pharmacist (SP), or unsatisfactory (U) based on performance across each category. The unsatisfactory grade is assigned if the prescription has major legal errors or is potentially harmful to the patient. The student pharmacist grade is assigned when there are minor errors in the prescription that are not harmful to the patient. The pharmacist grade is assigned when there are no errors in the prescription.

Prescription Wrappers were created to assist students in reflecting on their preparation, performance, and how to improve future prescriptions.

OBJECTIVE

1. Apply the exam wrapper concept to prescription assessments to increase student self-reflection.
2. Assess the relationship between prescription grade and preparation time, student confidence, and preparation activities.

METHODS

Evaluating Prescription Rubrics: Evaluate Prescription Rubrics Adopt Exam Wrappers Core Concepts Implement with first prescription assessment

Students were grouped based on performance into either: U (unsatisfactory), SP (student pharmacist) or P (pharmacist).

STATISTICAL METHODS

Table 1: Statistical Tests Performed for Each Objective Measure

<table>
<thead>
<tr>
<th>Objective Measure</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differences in entrance number of prescription</td>
<td>T-test</td>
</tr>
<tr>
<td>Differences in time spent on each study method</td>
<td>T-test</td>
</tr>
<tr>
<td>Self-reported Preparedness</td>
<td>Homogeneity test</td>
</tr>
<tr>
<td>Factors associated with student performance</td>
<td>Multiple Logistic Regression</td>
</tr>
</tbody>
</table>

RESULTS

Of the 120 students who completed exam wrappers, 81 (67.5%) obtained an unsatisfactory (U) grade, 26 (21.7%) were graded as having student pharmacist (SP) proficiency, and 13 (10.8%) had pharmacist (P) proficiency.

Bivariate Analysis

No significant differences in the total number of hours spent on preparation and the number of hours allocated to each study method were found between students who scored U and those who scored SP/P (Table 2).

Table 2: Student Self-reported Mean Number of Hours and Study Method Used for the Prescription

<table>
<thead>
<tr>
<th>Type of Preparation</th>
<th>Total Number of Hours Mean (SD) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>U (unsatisfactory)</td>
<td>1.5 (0.30)</td>
</tr>
<tr>
<td>SP (student pharmacist)</td>
<td>0.5 (0.24)</td>
</tr>
<tr>
<td>P (pharmacist)</td>
<td>0.5 (0.24)</td>
</tr>
</tbody>
</table>

Multiple Logistic Regression Analysis

A significant positive association between student self-reported preparedness and prescription grade was identified. Students who felt adequately or very prepared were respectively 23 and 36 times more likely to have a grade of SPP in the prescription compared with students who self-reported being not at all/somewhat prepared (Table 4).

Table 3: Student Self-reported Level of Preparedness

<table>
<thead>
<tr>
<th>Level of Preparedness</th>
<th>U</th>
<th>SP/P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all/Somewhat</td>
<td>89%</td>
<td>1%</td>
<td>31</td>
</tr>
<tr>
<td>Adequately</td>
<td>35</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Very</td>
<td>15</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>57%</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION/CONCLUSION

• The Exam Wrapper concept was applied to the prescription assessments as the Prescription Wrapper to increase student self-reflection (Objective 1).
• Number of hours and methods of preparation did not demonstrate an impact on performance. Student’s self-reported level of preparation was associated with higher performance (Objective 2).
• The finding that number of hours and method of preparation did not improve performance was unexpected. This calls for additional study into what may be a predictor for student success.
• An analysis of the causes for errors and how that may relate to the students’ level of preparedness could help explain why self-reported preparedness was a predictor for success but hours and method of preparation were not. If students are more likely to make an error due to anxiety versus content knowledge, this may change how we teach students to avoid dispensing errors.
• The Prescription Wrappers will be continued in following semesters to increase student self-reflection and to find additional predictors of student success.
• These findings may indicate a need for a larger discussion of why dispensing errors occur in practice and how we can better train students to avoid them as practitioners.

LIMITATIONS

• This study only focused on the first of nine prescriptions filled by the students.
• There were students (n=8) who either incorrectly filled out the exam wrapper or only partially filled it out, thus their data was not included.
• Only one group of students was included which limits generalizability of the findings.
• Students completed the wrapper after receiving their prescription grade, which could impact their responses.
• Prior community pharmacy experience was not collected but could impact performance and student preparation needs.

REFERENCES


Correspondence: Lauren M. Caldas, LM.caldas@vcu.edu