Iterative Peer Review (IPR)

For Professional Development

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ABSTRACT

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1. INTRODUCTION

Traditionally when instructors facilitate peer review of code or writing, it often fails because it relies on one-to-one (or one-to-few) transactional feedback. This typical approach relies upon assumptions about student ability to: a) equally assist each other in the task at hand; b) focus their attention on writing for extended periods of time; and c) rely on only one additional example of a document to inform their own work. When it comes to higher-stakes assignments like creating or refining resumes and other job search documents, this approach does not effectively serve our students' needs for quality, actionable feedback.

2. RELATED RESEARCH

As programming instructors and programmers, we are—by nature—accustomed to sharing code in a variety of ways. Ghosh and Sinkovits (2019) present tentative results that would indicate pedagogical value in aiding student learning. Writing, and providing feedback on writing, however, appears to be different in that it is a much more personal representation of the self.

Researchers have looked specifically at peer review as part of the overall process of producing documents. Clarke, et. al. (2014) have demonstrated that—what they describe as "in-flow peer-review (IFPR)"—peer-review that is conducted while an assignment is in process results in greater motivation for both reviewer and reviewee. The hope with our research extends that motivation in the desire to also model not only the immediacy of peer review, but to reinforce the long term practice of peer review and the solicitation of feedback on one's writing.

Researchers, like Kotturi, Du, Klemmer and Kulkarni (2017), have demonstrated, however, that students often behave in anti-reciprocal ways after they receive better reviews on their work. The Iterative Review Process (IPR) seeks to address those behaviors because we contend that this anti-reciprocal behavior isn't the result of peer review in general but of peer reviews that are not actionable and useful for the students receiving them. We are encouraged in finding a solution to addressing this concern because peer review is often a one-to-one activity that is dependent upon the interaction between two individuals. Turner, Quinones, Edwards and Chase (2010) have demonstrated that code reviews are more positively impactful when students are exposed to critical feedback from multiple perspectives. We contend that with IPR, it is the ability to structure and provide feedback from multiple students in a short period of time that results in a more positive and realistic experience for our students.

Last, the perceived usefulness and relevance of peer review is an important consideration that is often over-looked. Xiong and Litman (2011) have demonstrated that while it is possible to predict the helpfulness of peer review, it is equally important to consider the receptivity of the advice afforded. While we don't consider the direct measurement of feedback offered through Iterative Peer Review, Xiong and Litman do serve as a helpful reminder that we consider the importance of reflection and receptivity as part of the overall process of peer re view in general.

3. PEER REVIEW

Students should be able to:

- Evaluate a job candidate's target job;
- Explain how a resume or cover letter functions;
- Identify and correct errors and typos; and
- Justify an overall approach.

3.1 ISSUES SURROUNDING PEER REVIEW

Peer reviews suffer from a variety of understandable criticisms that Iterative Peer Review (IPR) seeks to address. Some of the more significant include:

- Varying overall experience depending upon which peers a student works with for their review (quality of feedback);
- Ability to focus on complex tasks for extended periods of time;
- Task authenticity;
- Development of expertise.

Traditional peer review often groups students into pairs or small teams to provide feedback on one another's writing. Those groupings often fail to take into account learning and working styles resulting in groups that will quickly lose focus after providing only shallow feedback on each other's writing. Part of the reason for this failing is because it turns writing into a larger performative activity where feedback is provided in a transactional fashion in the presence of other peers. As the individual, one has to be willing to: provide honest feedback, in the presence of others, and with the acknowledgement that those others will be providing me with feedback later in the session. This results in undue pressure to provide only the most surface-level feedback for fear of later retribution from the group.

While an instructor might intervene in a group to model expected behavior, that too is problematic in that it reinforces the role of instructor as expert, and enforcer of a behavioral norm. Such interventions also remove any responsibility from the group where the focus is on an artifact that the instructor will ultimately assess and assign a grade.

In other words: peer review is an inherently classroom-based activity that does not translate easily for students into real-world situations.

Professional development documents and situations including cover letters, resumes, preparing for interviews, etc. are different than the writing and communication students typically practice in academic settings in that they have consequences beyond grades. The appropriate preparation and use of these documents lead to employment and promotions—and can often make the difference between more or less successful careers. For many, however, the process is also purely transactional and one in which employers hold authority and power. Employers decide who to hire or promote.

Traditional peer review reinforces those relationships.

To further complicate the picture, templates and formulaic approaches to resumes and cover letters proliferate. The expectation is that the more closely students mimic the formula, the more successful they will become with their job search. In a traditional peer review, we are merely evaluating an author's ability to follow instructions in the form of a template.

3.2 TERMINOLOGY

Throughout, the following terminology is used for the various artifacts and roles associated with IPR:

- The *author* of a document is the student who did the work associated with the submission and who will ultimately receive a grade for that work. They are also the recipient of any reviews of said work.
- A *review* is written by another student in response to specific prompts about a specific submission.

3.3 GOALS OF ITERATIVE PEER REVIEW (IPR)

Outside of the classroom, we ask for feedback differently. When it comes to resumes and cover letters, we can certainly pay someone for their expertise, though that is unlikely for students at the beginning of their careers. More likely, we have specific questions about our documents, and we ask those we trust to help us with those questions or concerns.

While not perfect, IPR strives to more closely approximate the kind of professional behavior we hope to reinforce with students: they should have more investment and control in the process associated with gathering and incorporating feedback on their writing.

3.4 THE IPR PROCESS

IPR is an appropriate approach for face-to-face, online and hybrid instruction, requiring effectively the same resources for students to be effective. To participate students must have:

- Draft of resume, either online or paper;
- Position for which they are applying;
- Mechanisms for providing feedback.

As instructor, IPR requires more preparation than for traditional peer review as the logistics are more involved, and students may initially require more encouragement. The following should be adapted as required by your students but provide reasonable places to start the process. The following uses student resumes as an artifact for IPR, but can easily be adapted to other documents that they might produce:

- Students start by making their resume available for review. This might be physical hard copy in a traditional classroom, a Word document in a computer classroom, or a shared Google document in an online/asynchronous course;
- Students are then instructed to move one seat to the right so that they are viewing another student's resume;
- The instructor provides students with *one task* to complete (see below);
- The instructor monitors progress in class, but typically allowing no more than 2 minutes per task;
- Students provide written feedback directly on the resume they are reviewing, **and they sign their name to their comment**;
- Students then move one desk to the right, with reference to Figure 1 to assist with the physical layout of the classroom.
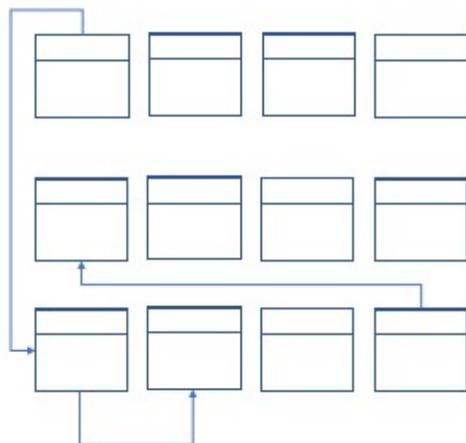

Figure 1. A rough workflow for IPR in a physical classroom.

At the completion of the IPR, it is essential to the experience that students have an opportunity to:

- Review all questions and feedback provided by their peers;
- Have an opportunity to talk directly with peers where they have questions or may need clarification;
- Develop a written plan of action for how they will revise their work.
- Reflect on the overall process of IPR and how students might adapt similar strategies outside of the classroom.

3.5 BROADER CONSIDERATIONS

Writing assignments are historically suspect to a variety of challenges. Although not a direct benefit from IPR, the IPR process addresses a couple of concerns:

- Investment in one's writing;
- Confidence in one's writing, and in one's ability to talk about writing;

4. ISSUES AND GUIDELINES

There are a couple of things to watch for with IPR as an instructor:

Unprepared Students: As an instructor, there are two options here. The first is to ask unprepared students to leave, and not participate. This approach, however, does not work well in my classroom where I'm trying to encourage accountability and a willingness to admit to one's mistakes and shortcomings. Unprepared students are those who do not have resumes to review—that does not mean they are not prepared to provide feedback to others. As a second option, encourage unprepared students to stay and to participate. Let students know that they arrive at a desk or computer without a resume, they get a five-minute break from the review process!

Uncooperative Students: Although it is uncommon, the nature of IPR can make it more apparent to other students, if anyone chooses to not participate—especially if they are not moving from desk-to-desk.

Students are resilient and understanding; remember that as instructors we don't have to control for every situation The Mock Interview (4.5) might be an effective and less confrontational place to have a conversation with non-participating students.

4.1 IPR AND PLAGIARISM

Whether it's writing or writing code, authentic assignments are difficult if not impossible to plagiarize. The highly individualized nature of resumes and the process of IPR should virtually eliminate any risks associated with plagiarism.

However, the nature of IPR addresses a variant concern: students who overly rely on copying from templates and the approaches that other students take. Is that, by definition, a bad thing? Arguably, no in the sense that outside of the classroom we seldom would take the time to recreate something already done well if it can suit our purposes.

Although not explicitly inherent in IPR, direct feedback does reinforce the very personal and personalized nature of effective resumes and cover letters. Templated need to be adapted, skills reworded, and experiences carefully crafted as students need to recognize those are unique to them.

Employment decisions are often about choosing winners and losers, whether any of us like to hear it, or not. IPR provides additional voice and encouragement to students who are learning how to identify as professionals, not as someone who merely fits someone else's templated view of them.

4.2 GRADING

IPR is new and different for instructors and students alike. There are at least a couple of ways that IPR should inform how you think about grading.

The first is that you aren't just grading an artifact, or a completed resume. When students turn in their work, be sure to ask for:

- Final resume;
- Draft resume, including comments from IPR;
- Written plan for their resume, from the IPR process;
- Copy of the position for which the resume was intended (e.g. ideally, that for which they were applying).

Grading therefore becomes more contextualized and authentic because it no longer occurs against an ideal that you, as instructor, hold in your head. Rather, it is rooted in the feedback provided by peers, set against a specific plan to apply for a position, and evidenced in a specific document that results from that plan.

4.3 ANONYMITY

There are certainly some types of peer review where anonymity of the author and individuals providing feedback is important. However, the process of applying for, interviewing and securing employment involves many individuals in a process that often leaves the job seeker feeling as though they lack control.

IPR is designed to facilitate conversation in realistic, constructive ways that as instructors we hope students will continue to engage in throughout their careers. It is unlikely that they will ever receive anonymous feedback on their job search document. It is equally unlikely that they will receive feedback in a public forum. IPR is designed to encourage students to develop a comfort level with proactively asking those that they trust for feedback on their writing.

4.5 THE ROLE OF EXPERT REVIEW

IPR is intentional in that it invests authority in students in taking control of the feedback they receive on their professional development documents. We should not overlook, however, the role that experts play in this process. Human Resource, Hiring, Technical and other Managers benefit in many respects from having reviewed thousands of resumes, and conducted hundreds of interviews. Their feedback on what does and does not work should be valued in that respect.

The same applies for instructors: we too have reviewed hundreds, if not thousands, of resumes. What IPR should not do is replace substantive feedback from the instructor. However, that feedback should occur in the context of IPR and as part of a broader dialogue. Although it is not always practical, one suggestion is to conclude the process with a **Mock Interview** between student and instructor.

The mock interview should be based on the same documents from the IPR including the position description that the student provided. The goals of the mock interview are to:

- Allow the student an opportunity to practice their interview skills;
- Determine alignment between interview and resume;

- Allow time for a discussion about places where further revisions to the resume might improve that alignment.

This is also a time for instructors to ask questions directly of a student that focus on further refinements and/or clarification of a student's approach in their resume or other employment document. Although not exhaustive, the following questions might prove useful for a student:

- Your peers suggested that you not include your high school job on your resume. When it came up in your interview, you had a hard time explaining its relevance. What reasons do you have for leaving it in your resume, and how might you better answer that question in the future?
- Were there any questions you would have like to have been asked in the interview? What could you have included on your resume that might have prompted me to ask those questions?

5. ACTIONABLE REVIEWS

The IPR process concludes with students reviewing the comments provided on their documents and writing a plan for how they plan to incorporate (or not) the suggestions.

That review can be taken a step further at the very end of the process (as far as the classroom is concerned) in also asking the student if there are any further opportunities for revision and improvement. An appropriate question to guide that part of the conversation might include: *If you had one additional hour to make one more significant change to your resume, what would it be? Why? What would that change look like?*

As a final review, I would encourage instructors to have students respond to those questions during class, allowing time for it to also guide the sharing of responses with each other.

6. NEXT STEPS

Much of this approach is based on decades of teaching writing, and nearly as much time teaching programming—and arises purely from the frustration of feeling that peer review should be an essential part of the writing process, while knowing full-well that it often fell short as an empty exercise.

While others have written about the shortcomings of peer review, this article was designed to share an approach, through IPR, that addresses many of those shortcomings.

Very likely, local experiences with IPR have not identified shortcomings, variations or other adjustments that would make IPR an even more effective tool for both providing students with actionable feedback on their writing, but in starting the modeling process for how they might approach writing in professional settings outside of the University classroom.

In that respect, future research might consider the following questions:

- Does IPR work as effectively in purely distance classrooms?
- How do asynchronous activities change the nature and efficacy of IPR?
- How important is the role of the instructor in conducting an effective IPR?
- How should IPR be adopted based on the nature and mode of writing being reviewed? Are there forms of writing for which IPR is not an effective approach?

Very often, we approach any new idea as panacea to an existing problem. The intent is not to suggest that IPR is a magical cure-all to the woes of peer review, but to argue that there are heavily contextualized situations, like the student production of professional development artifacts such as resumes and cover letters, that are well-suited to IPR.

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Appendix I – Directions and Questions for Resume IPR

Note: the following five prompts are designed to be illustrative, not complete for the activity. A combination of managing logistics, setting up the activity, completing the five prompts and allowing time at the end for reflection will take approximately 30 minutes. If you plan a session that will take more than 30 minutes, allow a 5-minute break.

1. Look only at the left half of the resume, and circle keywords (e.g. Java, C#, HTML) that **match keywords** in the job description. At the bottom of the resume, make a note for any missing keywords that are mentioned in the job description, but either missing or in the wrong location on the resume.
2. Look only at the left half of the resume and put a square around keywords that **do not match keywords** in the job description. At the bottom of the resume, make a note for which of those keywords might be eliminated, as well as which of those keywords will help positively differentiate the job seeker from other candidates.
3. Review the right half of the resume to identify **details** to support keywords. Remember that details are quantifiable (e.g. increased productivity by 40% OR reduced error rate by 25%) and specific. Underline those details. At the bottom of the resume, make note where details might be missing, and provide an example of the kind of detail that you think may be helpful.
4. Without reading the resume, consider the overall layout and how easy it is to skim it and read quickly. Does the text layout appear wavy to you? If so, visually how many columns does it have? Draw them for the author, and using arrows suggest how she or he might consolidate so that their resume has no more than **3-4 visual columns**.
5. Review the resume one last time for any obvious grammatical, spelling or other issues. Identify any errors you find and make at least one suggestion for correcting each error.

6. BONUS: If you have additional time while other students are completing any of the above, feel free to review previous comments, and the resume, for any other issues, and make note of those. **Remember to also make note of things the author does particularly well with their resume.**