

Enhancing the Feedback Experience for Instructors and Students Victor Oguledo, James Hudson IV, Ricardo Silveira, Russell G. Almond & James A. Hernandez Department of Educational Psychology Learning Systems, Florida State University

Introduction

One of the most challenging tasks for an instructor is to provide feedback about student writing that is high-quality, timely, and aligned with the course objectives. This is particularly true in student writing about a technical subject, where students may have problems with either the technical content or expressing their ideas through language, figures, and tables. In addition, if the instructor uses a grader or teaching assistant to provide feedback, they need to train those graders to provide feedback that is consistent with the instructor's feedback.

Therefore, the purpose of this project is to create a feedback system using **Evidenced-Centered Classroom** Assessment (ECCA) to enhance the feedback experience for instructors, their teaching assistants, and students. ECCA is a theory describing that learning may be optimized when there is alignment between teaching activities, learning activities, assessing activities, and learning objectives. In this project we are creating a feedback system that assists instructors in aligning learning activities like student technical writing (See Figure 1 Student Document), with the assessing activity of grading the student writing (See Figure 2 Rubric), and the teaching activity of providing high-quality timely feedback (See Figure 3 Feedback Note) to the learning objectives (See the Scale/Criteria column in Figure 4 of the Feedback Database).

Methods

The Co-Principal investigators and three undergraduate assistants have been developing this Feedback system. We have completed the design phase by conducting a Use-Case Analysis. At present we have developed a "mock-up" of the prototype to guide coding. We are currently using Java code to build the first working prototype. Then we will test the prototype and gather feedback to improve the system. The following tools are being used: Java & BlueJ • Git Umbrello & Figma

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• Junit

The "Mock-up" prototype of the Feedback System is displayed below in Figures 1-4. Figure 1 is an example of student "Pseudo Albert's" learning task, a final writing assignment for instructor James' undergraduate Educational Psychology course. On the right-hand side of this figure there are feedback notes James has/is making to assess Albert's learning performance. This feedback note also acts as a teaching activity to specifically signal to Albert how close their performance matched the learning objectives. For example, Albert received three "+2's" and one "-2" points, for a total of 6/8 points on the Constructivism learning objective (See Figure 2 of the Rubric). Figure 3 represents the elements of a newly generated feedback note. The minimum viable product we are creating is for a grader like James to type in their note and for the feedback system to automatically search and generate results from the database of feedback notes (see Figure 4). If James has not made a similar feedback note, or wants to make changes to an existing note, the system will automatically add a new entry into the database for James to use on the next student's assignment. Figure 1 Figure 2 Student Page < 1 > of 4 🕐 - ZOOM

Constructivism

Constructivism is a philosophy that states that knowledge is something that people construct based on what they observe and their own experiences and biases, and that the actual truth cannot be known (Woolfolk, 2019). In this philosophy, people actively construct their knowledge and understanding of the world based on the information they have. The two main components of cognitivism are cognitive constructivism and social constructivism

Cognitive constructivism is an individual process where the individual uses their own knowledge, self-concept, and beliefs to construct their understanding of the world (Woolfolk, 2019). Social constructivism is a social process in which public knowledge is formed. In this, social interactions and cultural tools influence individuals' constructions of their view of the world and influences their individual development and learning.

This lesson plan relates to constructivism because the teacher is guiding the students in their construction of their knowledge, mostly through inquiry-based learning. The teacher is giving the students a problem to solve, and they must use what they know and the materials before them to make hypotheses about the solar system and the bodies within it. For example, when the class modeled the solar system with students acting as the planets, they had to observe the differences in orbit of each planet and think about the implications of that.

Figure 4 Feedback Pallet Database



| t | D | 0 | С | U | m | e | n | t |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| Con | ntext | | | | | | | Triggers from Docun | nent | (highlighted) | |
|--------------------|-------------------------------|-----------------|-----|----------------------------|---|------------------|---|---|------|-----------------|---|
| Course Number = | Assignment 📼 | Dataset | ≂ (| Grader | Ŧ | Student | Ŧ | Incorrect Example | Ŧ | Correct Example | Ŧ |
| 2275 💌 | CSLPA Section 1 - Draft | N/A | • | James | • | Pseudo Albert | • | | • | | • |
| 2275 💌 | Section 1 - Draft | N/A | • | James | • | Pseudo Albert | • | | • | | • |
| 2275 💌 | Any 🔻 | N/A | • | James | • | Pseudo Albert | • | This lesson plan relates to constructivism because the teacher is guiding the students in their construction of their knowledge, mostly through inquiry-based learning. | • | | • |
| 2275 💌 | CSLPA Section 1 ▼ Draft | Solar System | • | Artificial Intelligence | • | Pseudo Albert | • | | • | | • |
| 2275 💌 | CSLPA Section 1 ▼ Draft | Any | • | James | • | Pseudo Albert | • | | • | | • |
| | CSLPA | Galar | | | | Decude | | This lesson plan relates to constructivism because the teacher is guiding the students in their construction of their knowledge, mostly through inquiry-based learning. The teacher is giving the students a problem to solve, and they must use what they know | | | |
| 2275 💌 | Section 1 Draft | Solar System | • | James | • | Pseudo Albert | • | and the materials before them to make hypotheses about the solar system and the bodies within it. For example, when the class modeled the solar system with students acting as the planets, they had to observe the differences in orbit of each planet and think about the implications of that. | • | | • |

This Feedback System may assist instructors in enhancing the quality and timeliness of the feedback they provide on their students' writing documents. By designing this Feedback System around ECCA, this may improve the quality of teacher feedback by aligning this feedback to specific features of student performance, with the learning objectives of the course, and providing more accurate ratings of student performance on the rubric. Additionally, instructors may save time using the Feedback System because of the intuitive search feature of the note and with the well-organized Feedback Pallet Database.

Results

| | | Assianm | ent Rubric/Scal | e | | |
|---|--|--|--|--|---|---|
| 🦯 🥕 📐 💦 🔪 🖊 T | ÷ 🖌 🗖] | CSLPA Rubric SP23 | | | | |
| 7 • | | Criteria | Ratings | | | Pts |
| APA Format/Spelling & Gramm Run-on sente Good effort on this sentence. The information packed into this set this run-on sentence. | har JH ⊉ … There is too much ntence. Please fix | Section 1 - Learning Theor Constructivism <u>view longer description</u> | ies: 8 to >6 pts Meets Expectations Student provided clear and accurate definitions of constructivism (2pts) and at lead two of its key components (2pt Student applied the two defined key components to specific examples from the lesson plan | 6 to >4 ptsPartially Meets ExpectationsEither the definition of constructivism (-/2pts), definitionsastof two of its key components(-/2pts), OR application of the two key components to the lesson plan (-/4pts) is unclear or inaccurate. | 4 to >0 pts Does Not Meet Expectations Either the definition of constructivism (-/2pts), definition of two of its key components (-/2pts), AND/OR application of the two key components to the lesson plan (-/4pts) is unclear, inaccurate, or missing. | ons of of |
| - Constructivism +2 😵 🗕 | JH ⊘ … | | (4pts). | 8 to >6 pts | 6 to >0 pts | |
| Constructivism +2 😒 — Constructivism This is a good start. Be explicit component of Constructivism v | JH ♥… JH ✔… about which you are applying | APA Format/Spelling & Grammar | Meets Expectations Students' explanations are clea with few grammatical and spell errors. Students also included references and proper citations Students provided a brief introduction and conclusion. | Partially Meets Expectations r Students' explanations are somewhat clear with some grammatical and spelling errors. And/or students did not include references and proper citations in APA format. And/or students did not provide a brief introduction or conclusion. | Does Not Meet Expectations Students' explanations are not clear with many grammatical ar spelling errors AND students d not include references and pro- citations in APA format. And/or students did not provide a brief introduction or conclusion. | nd id - / 12 pts per r f |
| to this lesson plan. For example [Solar System] lesson plan inc Constructivism. For example" | e, state that "The ludes Social | Figure 3 | Crit | teria Score | Status ² Suggested [▲] Editing [●] Approved Author Al Artificial Intelligence | Total Points: 6 out of 100 |
| | | Feedback No | ote Features | c scale of the hing Objective Criteria Value change i points on Rubr | n RA Russel Almond ic JH James Hernandez | |
| Missing application of the less Cognitive Constructivism. Constructivism +2 | on plan to | | Search/New Note Search database by typing content of note Search Results List of similar notes from database | APA Format/Spelling & Grammar -1 Run-on sente Good effort on this sentence. There information packed into this sentence on sentence. | JH 2 ···· Va Re 7/ Se Please fix this run- Se | Options alidity Score 80% eliability Score 70% 10/22 2:10 PM ee Note History Remedial options ee module for a detailed |
| Good application of Social Conspecific event in the Solar System | nstructivism to a tem lesson plan. | | Delete Are you sure y note? Yes, De | e NoteDo you underou want to delete theImage: Second se | erstand the feedback? co need clarification need to explain | pelling and Grammar. Student Support These two features are designed to |
| Score on Rubric and Note Value Scale (criteria) = (change in = points) | symbol/keyword (in note and = Datas document) | et Specific d to column D) = Feedback Description | Display on Note | Reinforcing Description | | allow students to interact with the feedback to enhance their learning experience. |
| Constructivism 2 | Good Definition | • | • | Good definition of Constructivism | | |
| Constructivism • 2 • | Good definition of components | • | • | Great definitions of both Cognitive and Social Constructivism | | |
| APA Format/Spelling & | Missing indent | • | All paragraphs need to be indented. | | | |
| Constructivism • 2 • | Applied Social Constructivism | • | • | Good application of Social Constructivism to a specific event in the Solar System lesson plan. | Refe | erences |
| Constructivism -2 -2 | Missing Application of Cognitive Constructivism | • | Missing application of the lesson plan to Cognitive Constructivism. | • | | |
| Constructivism • | Be Explicit Sola | r System 🔹 | Be explicit about which component of Constructivism you are applying to this lesson plan. For example, state that "The [Solar System] lesson plan includes Social Constructivism. For example" | This is a good start 🔹 | | 6 |
| | | | | htt | os://bit.ly/E | CCAFeedback: |
| Impli | cations | | | | | |

