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Developing critical thinking skills: Using Edward de Bono's six thinking hats in formative peer assessment & feedback

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Abstract

Increasingly, management students are required to demonstrate their critical thinking and problem-solving skills upon entering the workforce. This prompts educators to ask how can students be taught to think critically and what kind of exercises can be built into undergraduate learning to ensure critical thinking and problem-solving are practiced? As such, peer assessment as learning promotes active critical thinking and problem-solving via collaborative assessment and exchange of feedback amongst peers. This classroom exercise is designed for students on any management undergraduate course to develop their critical thinking and problem-solving skills through a peer assessment and feedback task. Adopting Edward de Bono's approach to thinking encourages students to think in a focused, deep and critical way about the piece of work they are assessing. Through this exercise they obtain the benefits of developing critical thinking skills and further learn to develop a collaborative approach to problemsolving in the provision of feedback and feedforward.

Introduction

The formative assessment on the 2nd year undergraduate course in Strategic Marketing calls for students to submit an industry analysis using Padlet (see www.padlet.com). The links to the Padlets are submitted and posted to Moodle and form the basis for a peer assessment exercise. For students to successfully engage in any peer assessment exercise, they must be able to think critically. Using the metaphor of wearing different coloured hats, de Bono designed a very simple model but one which when applied correctly can augment critical thinking and assessment (de Bono, 1985). The model reflects de Bono's belief that "simple methods used effectively are more valuable than complicated methods that are difficult to understand and confusing to use". In explaining the philosophical underpinnings of his six coloured hats, de Bono declared that "when we attempt practical thinking, there are three fundamental difficulties that we encounter", he identifies these as emotions, helplessness and confusion. Given that students are likely to encounter all of these elements during a peer assessment task (Brown et al., 1994; Light et al., 2009), I chose to implement this technique in an attempt to alleviate some of these feelings and to promote critical thinking and problem-solving.

Theoretical Foundation

Rust (2007) asserts that how the student experiences feedback is central to the scholarship of assessment. Feedback should help students to understand more about the learning goals, their own achievement status as regards these goals and how to bridge the gap (Sadler, 1989). Thus the idea of student involvement in the assessment process links conceptually to feedback. However, depending on the social, cultural, and educational background, participation in peer assessment may be accompanied by uncertainty as well as subjectivity and lack of reliability (McConologue, 2012). As such, much of the research on peer assessment has addressed questions of reliability and validity (Falchikov & Goldfinch, 2000; Magin, 2001; Sadler & Good, 2006). Yet, less research has examined students' perceptions of peer assessment, particularly regarding critical thinking. Perhaps, Nicol et al. (2014) provided some of the strongest insight into peer assessment's connection to critical thinking, finding that the unique kind of "reflective comparison" required also "engages students in active critical thinking". Furthermore, data from Nicol et al. (2014) suggest that "through reviewing the work of peers, students can learn to take control over their own learning, to generate their own feedback and to be more critical about their own work". Given the link between peer assessment and the requirement for critical thinking, Edward de Bono's six thinking hats approach; a heuristic based on separating different reasoning modes; lends itself particularly well to a critical thinking and problem-solving exercise. The hats help the students to assume a particular role and to hone in on a particular thinking focus, thus facilitating critical thinking and problem-solving.

Learning Objective

Overview

Since the shift of attention away from teaching information

and content towards developing thinking skills, continuous attempts have been made to instil critical thinking into the curriculum. One possible approach is through peer assessment. Peer assessment as learning in particular promotes active thinking via self-assessment and exchange of feedback among peers. One way to further facilitate critical thinking is to adopt the use of Edward de Bono's sixhat thinking. The blue hat considers thinking as a whole, it can be used to manage the overall evaluation process of the peer assessment and to enforce the guidelines for each hat, or it can be used as a tool for each individual to evaluate the feedback received from each 'hat'. The red hat introduces emotions and feelings, the person wearing this hat states their hunches about the piece of work, without justification or explanation. The white hat primarily looks at data and facts. It considers what information is present and how it could be improved and what further information is needed. The black hat represents caution and looks at potential flaws or issues with the piece of work. It is advised to either pair this hat with the green hat or to ensure that the green hat is used to offset the black hat. The green hat represents creativity, offering creative solutions and alternatives to the advice suggested by the black hat, thus offering up feedforward. The yellow hat represents optimism, the wearer looks for positives in students' work and finds the value and benefits. Thus, white, red and yellow speak particularly to feedback elements of the assessment. Meanwhile, black, green and blue speak to feedforward elements of the assessment.

The technique encourages constructive and non-habitual thinking on the part of students both when assessing their peers' work and when writing their own. Furthermore, students will realise that to adequately evaluate the assessment, they must consider the ideas of wearers of other hats; a process that necessitates consultation and collaboration.

Exercise

Materials, Space, and Other Requirements

- A room which holds approximately 20 students set up in three to four round/square table configurations
- Laptops/tablets for each student
- WiFi connection for access to Moodle
- Six hats per group, coloured red, blue, white, yellow, black and red
- Laminated A4 handout for each group explaining the general role of each hat (Appendix A)
- Six A5 pieces of colored card per group (red, blue, white, yellow, black and red)
- Metallic pens (for writing on dark colored card) (Amazon, 2020).
- A copy of the grading rubric per group (Appendix B)
- A copy of the grading sheet (Appendix C)

Time Requirements

Total time for task: One and a half hours if the instructor allows 15 minutes per assessment, up to two hours if allowing 20 minutes per assessment.

Before Class Preparation

Instruct students to complete their formative assignment and upload the link to their assessment to Moodle 48 hours before the start of the first workshop where the exercise is implemented. Remind students to bring their laptops/ tablets to class.

In-Class Activities

- 1. Explain to students about the exercise and highlight the advantages of peer assessment and feedback. Introduce students to the idea of Edward de Bono's six thinking hats. Explain how these hats can be used to focus thinking and facilitate critical thinking and explain that each student will be adopting a particular coloured hat approach.
- 2. Divide the class into groups of six and seat them all together at round or square table.
- Place the six hats, corresponding coloured card and pens, the laminated sheet which explains the role of each hat (Appendix A), a copy of the rubric (Appendix B) and a grading sheet (Appendix C) in the centre of each table.
- 4. Students should now choose which hat perspective they want to adopt and take the corresponding hat from the middle of the table and put it on.
- 5. Assign each group four links to the Padlet assessment on Moodle.
- 6. Tell students to choose one link and ask each group member to review it from their mode of thinking only and to write notes from their specific mode of thinking on their corresponding piece of colored card. After ten minutes of individual assessment, students should have a group discussion with each student relaying what he/she has written on their card.
- 7. Instruct the blue hat to collate all thoughts and once a consensus is agreed to fill out the grading sheet with written feedback and feedforward from each hat perspective.
- 8. Students should assign a grade and fill it in the space provided on the rubric sheet.

- 9. Repeat steps 6-8 for all assigned assessments.
- 10. Instruct the teams to return sheets and grades to the instructor for academic moderation.

Variations

- The class could observe a panel of six engage in the peer assessment exercise. Assign the panel a Padlet and instruct the class to look at the same Padlet. By listening to the thoughts and comments of the panel, the class can compare the panel feedback with their own based on solo thinking.
- Students could work sequentially in their groups rather than in parallel, all wearing each hat at once and collectively generating comments on the assessment for each hat.

Debrief

After the exercise is complete, explain to students that this exercise gives students a new way of thinking about not only the piece of work they are grading, but also about their own future assessed work. Prompt the class to think in future when conducting a piece of work, 'what might the blue hat say about my work?' or 'if I put on the black hat now, what would be some of the issues to consider'.

Students often declare the activity to be fun and engaging and like the way the exercise focuses their thinking and encourages them to think in a different way. Ask the students whether the different modes enabled a group consensus to be reached more easily than if approached in a less structured manner or solo manner.

Some students complain that peer assessment is not valid since they would rather the work is graded by the instructor. At this point the instructor can reiterate the learning gain from the exercise and highlight the benefits of the peer assessment process given the number of different peers they had to contribute to their work (see Gibbs, 1999). Further, explain how the six hat thinking enabled them to think critically and remind the class that the instructor will review all assessments before returning to students such that academic moderation is guaranteed.

Ask students if they felt less confused and less worried about the task using one specific thinking mode. Ask students whether it may facilitate thinking in their own work and future assessments and they will most likely agree given that this mode of thinking reduces confusion, a concern of many students when conducting peer assessment (Hanrahan & Isaacs, 2001). Some students say they are more comfortable giving the qualitative aspect of feedback than assigning the grade, in which case the instructor could opt for an alternative approach where in future where the students provide the written feedback and feedforward but the instructor provides the grade (Cestone et al., 2008).

Remind students that the technique for critical thinking

and problem-solving can be adopted in multiple scenarios throughout their learning, This six thinking hat approach could be used for a number of different tasks such as group discussion; case study analysis; analytical thinking; journal article analysis; planning; approaching a group/individual assignment; brainstorming; developing ideas around an issue; decision making; any task requiring a solution; lateral thinking; tasks requiring a totally different way of thinking; or problem solving – workshop-style quiz, problem-based learning. Specific questions to pose during the debrief are provided in Appendix D.

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Appendices

Appendix A

Appendix A - Edward De Bono's Thinking Hats



Appendix B

Appendix B - Rubric Formative Assessment 1 – Individual Industry Analysis using PADLET Grade DOES NOT COUNT TOWARDS FINAL GRADE Grade:		The assessment requires you to create an industry analysis using PADLT. You are required to choose the industry in which your chosen finn (assessment 2) operates. This assessment will help to inform your second assessment and enable you to determine your operative and to formulate your marketing plan. The feedback you receive will help to thin amarketing plan. You are free to be creative and to present your takes as you with.			
		20	15	10	5
Criteria	Very Go	od - Excellent	Satisfactory - Good	Poor - Satisfactory	Extremely Poor – Unsatisfactory
Organization & presentation The Padlet is attractively formatted The Padlet is well laid out and easy to read	The Padlet is exceptionally laid out and extremely well presented. It is very easy for the reader to follow.		The Padlet is well laid out and well presented. It is easy for the reader to follow.	The Padlet is poorly laid out and poorly presented. It is difficult for the reader to follow.	The Padlet is extremely poorly laid out and very poorly presented making it impossible for the reader to follow.
Content & Accuracy - Units to File/Documents Units to File/Documents Units to File/Jocuments Information published relevant to task Information published relevant to task Information published relevant to inform assessment 2 At least five relevant topics are addressed	The con is highly extreme task. Th well ans exceller taught f will serv extreme	tent of the Padlet appropriate and sty relevant to the e industry is very silvzed and it use is made of rameworks. This re assessment 2 sty well.	The content of the Padlet is appropriate and relevant to the task. The industry is well analyzed and good use is made of taught frameworks. This will serve assessment 2 well.	The content of the Padlet is not very appropriate or relevant to the task. The industry is quite poorly analyzed and little use is made of taught frameworks. This will need improving for assessment 2.	The content of the Padlet i not appropriate or relevant to the task. The industry is very poorly analyzed and little, if any use is made of taught frameworks. This wi need improving greatly for assessment 2.
Technology Utilization Makes use of the technology Information published is of different media forms	Exceller the tech Padlet. spectru to infon	it use is made of inology offered by A very broad m of media is used m the analysis.	Good use is made of the technology offered by Padlet. A broad spectrum of media is used to inform the analysis.	Poor use is made of the technology offered by Padlet. A narrow spectrum of media is used to inform the analysis.	Very poor use is made of th technology offered by Padlet. A very narrow spectrum of media is used to inform the analysis.
Graphics & Pictures Graphics used to support text Pictures added to enhance the look of the Padlet There is a good combination of text and pictures	Extreme made of support informa combini graphic	Hy good use is f graphics to textual tion. An excellent ation of text and 5.	Good use is made of graphics to support textual information. A good combination of text and graphics.	Poor use is made of graphics to support textual information. A poor combination of text and graphics.	Very poor use is made of graphics to support textual information. A very poor combination of text and graphics.
5. Writing & Grammar • The use of language is professional & appropriate • Grammar has been checked	Exceller and high written gramma	it use of language hly professional textual entries. No stical errors	Good use of language and professionally written textual entries. Few grammatical errors	Poor use of language and unprofessionally written textual entries. A number of grammatical errors	Very poor use of language and unprofessionally write textual entries. Numerous grammatical entries



Appendix D

Appendix C



1. How did you feel about assessing your peer's work?

2. Did you feel better positioned as part of a group to assess than individually?

3. Do you feel that the mark you assigned and the feedback and feedforward that you gave is accurate?

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