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Developing rigor with Critical Discourse Analysis to examine educators' transition toward active learning

Abd Rahman, N. F.^{a*}, Mohd Yusof K.^a, Phang F. A.^a, Azizan M. T.^b, Mohd Addi M.^c,
Sadikin A. N.^d, Tengku Malim Busu T. N. Z.^a & Nawi N. D.^e

^aCentre of Engineering Education, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

^bCentre for Excellence in Teaching & Learning, Universiti Teknologi Petronas, 32610 Seri Iskandar, Perak, Malaysia

^cSchool of Electrical Engineering, Faculty of Engineering, 81310 Skudai, Johor, Malaysia

^dSchool of Chemical & Energy Engineering, Faculty of Engineering, 81310 Skudai, Johor, Malaysia

^eSchool of Education, Faculty of Social Sciences and Humanities, 81310 Skudai, Johor, Malaysia

Abstract

This article discusses the Focus Group Discussion (FGD) in the context of the research project investigating educators' transition traditional teaching to active learning. Engineering education researchers are increasingly interested in qualitative data analysis to study social phenomenon on teaching and learning. We describe the research design in phases that show the pragmatic approach to conduct FGD. This study employed FGD using Critical Discourse Analysis (CDA) as the methodology to develop an interview protocol. We present an analysis of a two-hour interview conducted with a group of lecturers at one of the university in Malaysia using a set of interview protocol. The interview protocol was developed following the principle of CDA to provide answers on the aspect of social practices surrounding the implementation of active learning. With CDA, the FGD interview focused on the issues, obstacles to solve the issues, role of issues in the broader context and ways for the issues to be solved. The findings revealed that FGD enables the data collection and analysis to investigate complex belief on the concept and implementation of active learning. The educators responded positively to interactive active learning activities as a medium for instruction. In addition, the analyses indicate that educators' resistance emerged from the conflicting imposter syndrome among resistance educators. Uncomfortable with the transition from teacher-centred to student-centred learning, many of them have self-doubt on what is meant by active learning. CDA shows that they have developed a feeling of competence despite evidence of being incompetent in active learning. Further to this, we begin to identify educators' epistemic knowledge on active learning which leads to the imposter syndrome.

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1. Introduction

In an effort to demonstrate university responses to the 4th industrial revolution, university teaching has begun to shift towards nurturing the 21st-century learning skills for graduate engineers. However, 21st-century learning is complex and cannot be easily mastered, even when completing an engineering program and its course learning outcomes. This issue has invited many discussions on how to equip students with critical thinking, problem solving, creativity and communication skills (Glaze, 2017) to enable them to be part of the community of practice in the engineering discipline. The assumption is that nurturing these skills places the locus of control more on facilitating the students rather than on correcting their mistakes. In other words, as explained by Longmore et al. (2017), to facilitate academic change, it is necessary to shatter the current practices to ensure adaptability to the new environment.

1.1. A qualitative study in Engineering Education

Learning about the qualitative inquiry can be very challenging when the researcher is used to the positivist research worldviews. Positivist is repeating the same scientific methodology because of their belief about universal laws. Thereby, experimentation procedures are known for their reliability to get precision answers of laws that govern human behavior. Borrego & Bernhard (2011) mentioned the contradiction to quantitative study is the loop that hinders engineers from understanding qualitative study. One of the significant issues about qualitative study for novice is the subjectivity. This seeming conceptions of subjectivity have raised issues about meaning. Subjectivity, on the other hand, define their scientific methodology as a process for meaning-making about the social reality influenced by values. The quality of qualitative inquiry is known for their tick description (Creswell, 2013), exploration for illumination (Hoepfl, 1997), in-depth and emphasize on context (Creswell, 2013). The purpose of subjectivity in qualitative inquiry is brought by several worldviews such as interpretivism and constructivism , which implies that the researchers are required to organize their subjectivity according to the theoretical perspective.

In order to help researchers in engineering, this paper aims to describe how to use critical discourse analysis (CDA) apart from thematic analysis. Qualitative study is well-known for its general interpretation from the analysis and data collection method such as interviews. Unlike a survey, subjectivity in qualitative analysis is meant to deliver an exploratory explanation about a phenomenon. Subjectivity is unlikely to surface when the researchers often generalized thinking, repression or denial to external reality. These attributes can be easily observed when we devoted a particular understanding based on our prior hypothesis to the participants. According to Scott & Bhaskar (2015), different layer of social reality leads to different ways of explaining the phenomenon. Being subjective, it helps the researcher to understand that they must not rely on one type of knowledge when it comes to scientific investigation.

In this paper, we summarized the fundamental principle of using critical discourse analysis as the analysis method based on the data obtained from FGD. We used textual analysis of lecturers discourse to re-examine the transition of active learning approaches to achieve its goals in producing meaningful learning. The explanation of failure in active learning is rarely being discussed because the discussion is usually directed to its benefits to the students. Active learning is defined as a transformation of students' engagement and classroom management successfully since university often dealt with large number of students for one lesson. Thus, active learning is known for promoting inclusive learning. As for sociologist, such as Bourdieu (1974), on the contrary might oppose to this explanation of success being purely due to students' engagement. Bourdieu (1974) argues about cultural capital which requires an explanation about the cultural knowledge of active learning that helps lecturers to navigate the culture and alter experiences that is available to them. What is the available culture to active learning, which the lecturers might hiddenly transpire during their discourse? This is a question which cannot be answered merely using thematic analysis. In this paper, we are proposing Critical Discourse Analysis (CDA) as an alternative analysis method to develop rigor explanation about the embodied state of active learning as transformative agent among lecturers.

2. Method

Improving higher education quality requires us to explore the complex threatening problem such as resistance to transform. Often, the transformation at higher education comes with multilevel interventions for lecturers to ensure quality graduates. Our research team undertook a qualitative study on a group of lecturers at higher institution for their conception of active learning. The initial goals of this study are to explore what motivate and demotivate lecturers to use active learning in teaching and learning activities and their transition process. A focus group discussion interviews were conducted on two groups of twelve lecturers to gather their opinion and values on active learning experiences. Instead of using a survey, we decided to conduct focus group discussion (FGD). The selection of this method emerges after we have decided on the theoretical perspective of Critical Theory, simultaneously coincide with the method used. Critical theory keen to deliver answer according to the reflection on social action.

3. An example of case analysis using CDA

Fairclough (2003) asserts that all communication reveals participants' representation of active learning. During FGD, it is essential to ensure the protocol requires the participants to actively generate representation of active learning based on their life experiences. The example of the questions are as follows:

Issues in implementing active learning:

- a. What is the problem often faced when planning for active learning?
- b. Why do you consider this as a problem?
- c. How does it affect you as an instructor?
- d. How does it affect the learning outcome?
- e. What is the solution to this problem (based on your experience)?
- f. How this solution does helps you catering the issues?
- g. How do these issues influence the participation/involvement of students with knowledge construction?

When conducting CDA, the first step requires attention to issues circulating their communication about active learning. Some of the issues which we have identified are:

- a. Different degree of a support system at faculty level
- b. Overwhelming preparation for those who conducted at an individual level
- c. Overreaching planning which sometimes causes anxiety to complete the syllabus
- d. A misinterpretation on what is meant by students' active participation
- e. The connection between classroom management and active learning
- f. The uninvited stress when the university makes active learning compulsory to all lectures
- g. Mapping knowledge construction between formative assessment to the active learning activity
- h. The overly broad nature of 'active learning' among lecturers

They used these issues when representing the experiences of conducting active learning. Looking at these issues, we begin to find the similarities between the issues in order to establish the unit of meaning. Fairclough (2003) refer to this stage as the ability to extract the social problem in their semiotic meaning. We come to an understanding that these issues are representing their (i) value for active learning, (ii) the intention for teaching practices, and (iii) the action taken during active learning. These three components are known as participants' specific ways of acting and interrelating about active learning. In this study, they are known as the units of meaning during line-by-line analysis. The intention was identified when the participants elaborated their sense of purpose and responsibility (Pratt, 1992).

Following this finding, in the second phase, the line by line analysis was conducted to identify possible obstacle from the issues to be solved (Fairclough, 2003). The characteristic of active learning described during FGD are as below:

- a. Design the alignment between content, activities and assessment (*action*)
- b. Knowledge is socially produced under controlled activities (*value*)
- c. Learning occurred when students are able to deliver the correct answer (*value*)
- d. Direct the students towards the discovery of knowledge using the activities (*intention*)
- e. Students must participate in the given activities (*action*)
- f. Students must be able to complete the activity with the right answer (*intention*)
- g. Control the content development to ensure that the students are not drifting too far away from the syllabus (*action*)
- h. Provide group activities; like an integrated project, conduct flipped classroom or design their own quizzes questions (*action*)

The unique combination between their value, intention, and action made their pedagogical prescription become a matter to encourage students from being passive responders into an active learner. The characteristic given above showed their inclination to associate active learning as an activity. For them, successful teaching is seen from the

activity that allows students to participate. The generalized label made by participants on active learning is identified as the source of the issues emerged on earlier analysis. Participant transition towards active learning become problematic because they assume the pedagogical needs for active learning is the activity. This explains why those who feel pressured with the academic change norms at university firmly are against the idea of active learning. When the ‘active’ is represented by ‘activity’, it is likely why they value current practices as an active learning since students are moving around and participate in classroom activity. The analysis leads to imposter syndrome among resistant group to active learning. CDA depicted how the participants developed a feeling of competence in doing active learning despite their lack of clarity in meeting the pedagogical needs. Teaching excellence makes the participants become paralyzed by the inadequacy and refusing to take risk (McAllum, 2016). For those who are doing well with active learning, they have their own tendency to work hard to prove themselves to the university. Both qualities are concluded as imposter syndrome. This somehow has split the participants between experienced and new lecturers. The CDA manages to find the source for lecturers’ resistance toward the transition for active learning.

These representations of active learning have to lead the third phase of the analysis, which is to examine the emergence of agency. During this phase, the transcription is reviewed again to explore the possible function of imposter syndrome in the emerging culture of active learning. Imposter syndrome is known as persistent anxiety, the feeling no self-belonging in any group (Parkman, 2016). In this study, imposter syndrome is identified after they attended colloquium at faculty level and training prepared by the university as shown below.

Ms Ai: For myself personally, the community of practice sessions are more for my colleagues to share their concern. Sometimes, they are worried about their KPI (performance) on teaching and so on.

All participants are trained with active and cooperative learning and continued with cooperative problem-based learning. The institution has placed high accountability on ensuring that its educators employ active learning. The analysis reveals that there is generally a common intention of active learning, which is learning that is geared by students. Participants knew that:

Ms Sai: teaching is not transmitting

Ms Ai: giving the info will not inform us on what the students know

Mr Khai: every student learnt differently

Mr Zack: students learn best by teaching others

However, their action from the analysis of participants’ reflection about the evaluation showed rejection of students’ value, even without saying that they are wrong.

Ms Sai: Okay, your understanding is incorrect, so let us correct it.

Ms Ai: For instance, when they only manage to briefly explain the concept, I expand by asking questions until their concept is well-formed.

The intention and action are not heading to a similar aim. We realized that the participants unable to guide their action reflexively. Despite the changes, the action is preceded by their value that has been confirmed by the community of practice. The imposter syndrome, therefore, emerges from ill relationship between intention and action. Thus, the practice of active learning is habitus rather than reflexive. Building from this, the agency created for academic change can be mapped onto social reproduction (Archer, 2002) instead of social transformation. The benefit of social reproduction for academic change is that it helps to reduce differences between their previous teaching conceptions and what is intended to be achieved.

In the final stage of CDA analysis, Fairclough (2003) suggests identifying the possible ways to solve the imposter syndrome. The practice of active learning among the participant does not emerge from the academic change. Instead, we realized that the practice of active learning introduced by university is only the reproduction of prior social structure of teaching approaches. Archer (2002) mentioned that social structure refers to the interplay between rules, resource, power, relation, and practices that consist of generative mechanism. The social interaction by means of active learning, pointing out the boundaries of acceptable implementation of active learning, as well as anticipated penalties. The active learning in this context is unable to transform the existing social structure set in

place by teaching approaches of those in the past. This study proposes to make an intervention at the mechanism level which is overcoming the imposter syndrome. Hutchins (2015) noted that imposter inclination often is seen among educators at higher education due to its highly competitive nature. One of the implication is decreasing interaction with students (Parkman, 2016). We propose to allow reframing of active learning identity as a system of pedagogical approach rather than as an activity. In this manner, the system will be able to clarify what role needs to be adopted and guidance or mentoring on how they can carry their role so that learning becomes connected with how students learn.

4. Conclusion

As a conclusion, using CDA as the analysis tool for this study is beneficial to analyse the root cause of resistance for the transition. While most empirical study focuses on active learning implementation, less is known on the structural condition displayed for the current practice of active learning. The transition process from traditional teaching to active learning is not simple, and more study is needed to help educators to understand the context that refrains themselves from transforming. In this study, we have successfully identified the emergence of imposter syndrome among practitioners from their values, intention, and action towards active learning. Further, the identification allows us to deliver the social structure of current practice that showed the contradiction between intention and action. For future study, a more comprehensive study is needed to deliver the theoretical model of social mechanism by identifying the architecture of function that needs to be performed for active learning to take place.

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References

- [1] Archer M(2002) Realism and the problem of agency. *The Journal of Critical Realism* 5(1): 11–20.
- [2] Borrego, M., & Bernhard, J. (2011). The emergence of engineering education research as an internationally connected field of inquiry. *Journal of Engineering Education*, 100(1), 14–47
- [3] Bourdieu, P. (1974). The school as a conservative force: Scholastic and cultural inequalities. *Contemporary research in the sociology of education*, 32, 46.
- [4] Creswell, J. W. (2013). *Qualitative inquiry: Choosing among five approaches*. Los Angeles, CA.
- [5] Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research*. London: Routledge.
- [6] Glaze, A. L. (2018). Article teaching and learning science in the 21st century: Challenging critical assumptions in post-secondary science. *Education Sciences*, 8(1), 12, 1-8.
- [7] Hoepfl, M. C. (1997). Choosing qualitative research: A primer for technology education researchers. *Volume 9 Issue 1 (fall 1997)*.
- [8] Hutchins, H. M. (2015). Outing the imposter: A study exploring imposter phenomenon among higher education faculty. *New Horizons in Adult Education and Human Resource Development*, 27(2), 3-12.
- [9] McAllum, K. (2016). Managing imposter syndrome among the “Trophy Kids”: creating teaching practices that develop independence in millennial students. *Communication Education*, 65(3), 363-365.
- [10] Parkman, A. (2016). The imposter phenomenon in higher education: Incidence and impact. *Journal of Higher Education Theory and Practice*, 16(1), 51.
- [11] Pratt, D. D. (1992). Conceptions of teaching. *Adult education quarterly*, 42(4), 203-220.
- [12] Scott, D., & Bhaskar, R. (2015). *Roy Bhaskar: A theory of education*. Springer.