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Reconnoitering Innovative Ideas in Postnormal Times

iTAC

2023

iTAC 2023
INTERNATIONAL TEACHING AID COMPETITION
E-PROCEEDINGS

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PREFACE

iTAC or International Teaching Aid Competition 2023 was a venue for academicians, researchers, industries, junior and young inventors to showcase their innovative ideas not only in the teaching and learning sphere but also in other numerous disciplines of study. This competition was organised by the Special Interest Group, Public Interest Centre of Excellence (SIG PICE) UiTM Kedah Branch, Malaysia. Its main aim was to promote the production of innovative ideas among academicians, students and also the public at large.

In accordance with the theme "Reconnoitering Innovative Ideas in Post-normal Times", the development of novel ideas from the perspectives of interdisciplinary innovations is more compelling today, especially in the post-covid 19 times. Post-pandemic initiatives are the most relevant in the current world to adapt to new ways of doing things and all these surely require networking and collaboration. Rising to the occasion, iTAC 2023 has managed to attract more than 267 participations for all categories. The staggering number of submissions has proven the relevance of this competition to the academic world and beyond in urging the culture of innovating ideas.

iTAC 2023 committee would like to thank all creative participants for showcasing their innovative ideas with us. As expected in any competition, there will be those who win and those who lose. Congratulations to all the award recipients (Diamond, Gold, Silver and Bronze) for their winning entries. Those who did not make the cut this year can always improve and join us again later.

It is hoped that iTAC 2023 has been a worthy platform for all participating innovators who have shown ingenious efforts in their products and ideas. This compilation of extended abstracts published as iTAC 2023 E-Proceedings contains insights into what current researchers, both experienced and novice, find important and relevant in the post-normal times.

Best regards,

iTAC 2023 Committee
Special Interest Group, Public Interest Centre of Excellence (SIG PICE)
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PROMPTS FOR INTERNS' CRITICAL REFLECTIONS (PIR)

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ABSTRACT

In order to be relevant in the working world, employees are expected to have specific skills with one of the top three being problem solving skills. It is widely known that to acquire problem solving skills, one should have critical thinking skills. Critical thinking skills are indispensable as the world is moving towards automation which will dominate the low- and medium-skilled jobs. Only those with high-skilled jobs that require them to do a lot of thinking rather than repetitive and clerical work will still be relevant. With critical thinking skills demanded by companies, the education system should move towards producing critical graduates. In order to assist students to elevate their critical thinking skills, this study aims to develop a guidance for undergraduates in writing critical reflections on their internship experiences. The development of the instrument was done through three stages which are identification, development, and validation. In the identification stage, eight prompts were created based on Paul's Elements of Thought. These eight prompts were then compared to the Revised Bloom's Taxonomy under Knowledge Dimension of Metacognition and later compared to the Questioning Circle to ensure that the prompts were really able to enhance critical thinking of the interns. The instrument was then sent to three carefully selected Subject Matter Experts after they have agreed to give their feedback. The feedback obtained from two phases was thoroughly examined. Necessary amendments were made based on the feedback and the final version of the instrument was prepared.

Keywords: critical thinking, reflective writing, internship, instrument development, content validation

INTRODUCTION

Being able to compete with artificial intelligence is crucial for employees nowadays for them to be relevant in the job market. The use of AI in everyday work as a result of the Industrial Revolution 4.0 (IR 4.0) has proven to not only be effective and time saving, but also cost effective. This has caused the elimination of clerical and repetitive jobs in the workplaces. Due

to this, the human resources should be ready to upgrade themselves so that they are not defeated by the system. At present, attention has shifted to essential skills considered most relevant and important for graduates to possess for them to be ready for the job market. According to a report that was produced by QS World Rankings compilers QS Quacquarelli Symonds and the Institute for Student Employers (ISE) called the QS Global Skills Gap in the 21st Century, three most important skills as perceived by employers were problem solving, teamwork, and communication (Karzunina, West, Maschiao da Costa, Philippou, & Gordon, 2018). Data obtained from the QS Global Employer Survey 2019 and the QS Applicant Survey 2019 revealed that those three most important skills remain unchanged (Maschiao da Costa, et al., 2019) and Forbes (2019) reported that critical thinking was the second most important skill in 2020 with data literacy and tech savviness being the first and third most important skills respectively.

Based on the reports, it is obvious that the education system should fulfill its role to help produce graduates with high critical thinking skills (Karzunina et al., 2018). Through engaging as well as genuine intellectual work, critical thinking can be promoted. One of the ways that has been proven again and again to enhance students' critical thinking is through writing of reflections (Cha, et al., 2016; Khalid, et al., 2016; Mezirow, 1998; Xhaferi & Xhaferi, 2017). However, writing good reflections is a challenging task as students usually merely describe their experiences (Poldner et al., 2014). With the intention of assisting interns to produce highly critical reflections, an instrument consisting of a set of guiding questions was developed and validated. Since interns have the closest connection to the real working world, the instrument was developed for them.

Paul (1992) emphasizes repeatedly that compared to lower order learning which limits and discourages learners, importance should be placed on the teaching of higher order learning since it empowers as well as stimulates learners. It is not uncommon for educators to incorporate critical thinking skills in teaching and learning. When some programs provide tailored critical thinking subjects, some others were designed to embed critical thinking in the subjects that are already available. The incorporation of critical thinking in any academic setting can be seen using various methods and tools.

In order to investigate the various approaches to teaching critical thinking, a number of studies have been done. An investigation done by Kurjum et al. (2020) using a cooperative learning method called Think Pair Share in enhancing critical thinking in Islamic studies has found that this method is more effective in elevating critical thinking skills compared to the conventional method. In 2022, Chusni et al. found that through a scaffolding process called Discovery-based and Multiple Representational Learning (DMRL) in teaching essays managed to close the critical thinking gap between students with mixed abilities.

For the purpose of this research, the scaffolding tool chosen to help these interns elevate their critical thinking skills is through reflections. Xhaferi & Xhaferi (2017) mention that there is a strong connection between reflective writing and critical thinking although Stewart & Richardson (2000) claim that assessing reflections is challenging.

A Brief Description of Prompts for Interns' Reflection (PIR) Items Construction

To develop this instrument, this study followed three crucial stages related to developing an instrument as introduced by Hawkins et al., (2014) which are identification, development, and content validation.

For the first stage, in order to identify the items (prompts), Paul's (1992) elements of thought were made as the core reference:

- i) Purpose, Goal, or End in View
- ii) Question at Issue (or Problem to be solved)
- iii) Point of view or Frame of Reference
- iv) The empirical Dimension of Our Reasoning
- v) The Conceptual Dimension of Our reasoning
- vi) Assumptions
- vii) Inferences
- viii) Implications and Consequences

Questions from each element were created to guide the interns to write highly critical reflections.

For the developmental stage, comparison was made between the questions and the Revised Bloom's Taxonomy (RBT) specifically under the Knowledge Dimension of Metacognition since it is well known for promoting higher forms of thinking in education. Once the necessary amendment was done, this process was then followed by a comparison to the Questioning Circle model by Christenbury and Kelly (1983). This stage is essential as the model was designed specifically to guide students to possess more interests and show more efforts when replying to questions in class.

For the final stage, validation, based on their publications and work experiences in related fields (Rubio et al., 2003), six Subject Matter Experts (SME) were contacted through email inviting them to validate the instrument but only three agreed to validate the PIR.

METHODOLOGY

To validate the guiding questions, a survey method was used. Questionnaires consisting of close-ended items in Section A using a four-point Likert scale and open-ended questions in Section B were sent to the SMEs via Google Form. Developed with reference from the Description of Response Form by Rubio et al. (2003), the questionnaire cover four criteria including i) representativeness of the content domain ii) clarity of the item iii) factor structure (which was not used as it is not relevant) and iv) comprehensiveness.

In order to select SMEs to validate the instrument, firstly, experts were identified through gathering of journals online. Secondly, the list of experts from suitable faculties in all public universities were thoroughly checked for appropriate match. Six experts were contacted online but only three agreed to validate the instrument. Although there were only three, it is accepted as Lynn (1986) recommended at least three experts to be chosen to validate an instrument.

To obtain validity for this instrument, the SMEs were sent the instrument in two phases. For the first phase, the Content Validity Index (CVI) were measured and the PIR was amended based on the feedback obtained in phase one. The SMEs were then sent with the amended PIR for the second time for further comments and feedback.

RESULTS

Based on the calculated CVIs, the relevance rating obtained was less than 1, which is very low. However, rather than seeing the PIR as invalid, a review of concept and definition (Polit & Beck, 2006) with the experts was done since the interrater score results were low (Davis, 1992). In this case, expert 3 consistently showed misunderstanding to the context of the PIR, thus discussions were made with expert 3 online. After the discussion, expert 3 accepted the explanation and provided some valued feedback. From here, the questions in the instrument were edited. Some instructions were also provided for the interns, which consisted of certain details they need to include in their reflections; the frequency of the reflections, the focus of the reflections, the length, as well as the method of submission, and some advice related to writing reflections was also included. The second draft was then sent to the SMEs again to get their comments.

Based on the feedback gained through the second phase of the validation, all the SMEs gave positive remarks on the PIR and fewer amendments need to be made compared to the first phase. The final PIR was prepared and ready to be used.

CONCLUSIONS

A systematic approach was done in this study in order to ensure the validity of the PIR. The process of validation was made more objective with the use of CVI method. Although to be considered content valid the specified criterion must be met, which the PIR initially failed, a revision was made with one of the SMEs. Feedback obtained from the SMEs from both phases assisted the development of a valid instrument that is ready for use.

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