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A Reflective Writing Framework for Computing Education

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ABSTRACT

Many disciplines already embed reflective practice in their curriculum as it is important for the professional development of their students. Many frameworks have been developed to capture reflective practice, but there is a lack of knowledge about what constitutes it in computer science education (CSE). This poster introduces a reflective writing framework (RWF) in CSE. This poster makes two contributions: (1) it outlines the construction process of the RWF for CSE, and (2) it discusses the proposed validation of the RWF with a panel of experts.

CCS CONCEPTS

• **Social and professional topics** → **Computing education**.

KEYWORDS

Reflection, Reflective Writing, Computer Science

1 REFLECTIVE WRITING FRAMEWORK

Many reflection theories and frameworks have been developed to assess students' level of reflection especially in education, social science and nursing. However, to the best of our knowledge, no framework is targeting computing education. The overall aim of this research is to: 1) investigate the indicators that can be used to assess reflective writing in computing education based on the thinking activities that can be presented in the computer science writing, 2) validate the RWF with a survey of experts who will provide their suggestions and comments on the following items: the formulation of the language used in the description, and the relevance of these levels and the involved indicators, and 3) build an automatic tool to assess students' level of reflection in CSE based on the developed RWF. The focus of this poster is the first step investigating the indicators that can be used to build the RWF and assess reflective writing in computing education. The reflective writing framework (RWF) assess the levels of reflection in CSE. From the characteristics

Table 1: Indicators of the RWF

Levels	Indicators
Descriptive	Reports a fact from experience and/or material.
Reflective	Understanding: understands and analyses the experience.
	Feeling: identifies and analyses their thoughts and feelings.
	Reasoning: explains the experience by reasons.
	Comparison: links the experience to another.
Critical-Reflective	Perspective: shows awareness of alternatives.
	New learning: describes a new learning.
	Future action: intends or plans to do something.

of computer science writing that involves unique elements such as: problem-solving, data structure, algorithms and software systems and based on the theoretical and empirical work about reflection [1, 3], we derived the RWF consisting of eight indicators and three levels (see Table 1) [2]. The non-technical aspect in the following example *"Ultimately this was content that is covered in any basic parallel algorithms book and I did not believe adding it all to my report would have been worthwhile"* for the suggested indicators that are associated with the reflective level, such as understanding, feelings, and reasoning. The following example illustrates, *"If I were to do this project again, I would have examined the Quasi-NC algorithm given for bipartite perfect matching instead of Kulkarni not algorithm as I feel this is more relevant and important result"*, shows evidence of reflective plus critical reflective levels' indicators, these are: understanding, feeling, reasoning, perspectives, new learning, and future action.

2 FUTURE WORK

The future work involves analysing the annotation provided by the raters to evaluate the RWF, updating the suggest indicators based on the results of the analysis and build automatic reflective writing analysis for CSE.

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