

considered were the more complex, or potentially problematic features representing the cleaning products. These included: *food chain exposure (fce)*, *volatile organic compound (VOC)* - in relation to *air pollution potential*, *concentrated packaging (con)*, and *minimizes exposure to concentrate (exp)*. We also made note of any open-ended comments given by the participants. Results of this analysis proved quite interesting.

4. RESULTS AND DISCUSSION

When we asked participants to state their degree of agreement in terms of how the objects were represented by each EDSS and whether the representation enabled reflective activities, results indicated a slight preference for the graphical-based *cogito* EDSS. When asked whether the tabular representation provided by the US-EPA EDSS was conducive to reflective activities, 71% agreed (25% strongly agreed). When asked whether the textual representations provided by the *cogito*-based EDSS were conducive to reflective activities, only 64% of the participants agreed (14% strongly agreed). Finally, when asked whether the graphical representations provided by the *cogito*-based EDSS were conducive to reflective activities, 75% agreed (39% strongly agreed).

Looking back on the data collected we noted that many participants had a high exposure to tabular data on a monthly basis – 71%, with over half of the participants (57%) having weekly exposure. This could be why a higher percentage of participants felt that the tabular representations provided such an effective representation for reflective thought. In terms of the results obtained for the textual-based and graphical-based *cogito* EDSSs, one of the factors that may have contributed to the lower percentage of participants who thought the textual-*cogito* was less conducive to reflective activities may be that the textual representations provided a more realistic depiction of the cleaning products. For example, when shopping in a local market, a consumer can easily pick up a product and read its ingredient label. Here, there is only a slight difference between the represented world and the representing world – thus, the need for, and use of an external decision aid may be perceived as redundant. The tabular representations provided by the US-EPA tools may also evoke a similar response in such regard. However, given the participants' previous exposure to tabular data – results may have been skewed in its favour. Opinions relating to the graphical-based *cogito* EDSS provided insight into the power of refined illustrations. This was further indicated in open-ended comments given by the participants [Maciag, 2007] – that the graphical imagery was preferred, as upon first glance, you obtained an instant “feel” (stimuli) for the product. Many participants also commented on how the *cogito* EDSS provided a more conducive environment to conduct reflective activities given its cell-type user interface representation, as opposed to having to scan through the complex tabular display provided by the US-EPA.

When observing the results of our examination of user comprehension, results were interesting. One of the questions we asked the participants was whether they felt that the eight features representing the cleaning products (Section 2) were understandable and helpful in their reflective activities. 96% agreed (36% strongly agreed) that they were. However, when asked to define some of the *more complex* features, results contradicted the previous indicators as there was a rather large disconnect between how well the participants' defined the features and whether they thought they were understandable and helpful. The average participant score for each definition was below 50%, with only *fce*: 25%, *voc*: 29%, *con*: 14%, and *exp*: 36% of participants who correctly defined the respective definitions – thus, indicating the majority lacked a true understanding of the criteria. This provided a realization of the need to re-evaluate certain product feature representations. However, these results may indicate a larger issue, being that the participants almost unanimously stated their agreement that the features were understandable and helpful, yet were unable to successfully indicate their comprehension of them. *Could it be that the participant's simply did not consider these four features as being important in their reflective activities?*, or, *could it be that since these four representations were provided by the EDSS by default, that they were assumed to be important?* Many questions arise from these results. However, more research is required in this regard.

5. CONCLUSION

This paper examined the role of reflection and representation in EDSSs. Almost any EDSS will enable its users to conduct reflective activities. However, it is the degree to which reflective activities can be effectively, and satisfactorily conducted that denote the success of the EDSS. Through our examination, we illustrated that for an EDSS to be effective in such a manner the support framework upon which the system is built must incorporate high quality system representations – ranging from the user interface display to how system objects are modelled and represented. We noted that designing quality representations is an ongoing practice – as what has meaning to some users may not have meaning to others. In this regard, from our examination it was shown that some users might prefer more refined representations, while others may prefer more realistic ones. Deciding which representation to model the system by may be unique to the decision domain. We hypothesize that designers need to continually examine the needs of their users' in order to ensure they can satisfactorily conduct their reflective activities and obtain satisfying decision solutions. Many questions still exist and there are many opportunities for future analysis. Future work will include further analyses on the role of reflection and representation and deeper analysis in understanding how to best to design EDSS to ensure user satisfaction in such regard.

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