Prior to the calculation of CVI, the relevance rating must be recoded as 1 (relevance scale of 3 or 4) or 0 (relevance scale of 1 or 2)

Table 3: The relevance ratings on the item scale by three experts

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Expert  1 | Expert  2 | Expert  3 | Expert  4 | Expert  5 | Expert  6 |  | Expert in agreement | I-CVI | UA |
| Items |  |  |  |  |  |  |  |  |  |  |
| Q1 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q2 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q3 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q4 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q5 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q6 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q7 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q8 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q9 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q10 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q11 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q12 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q13 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q14 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q15 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q16 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q17 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q18 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q19 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q20 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q21 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q22 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q23 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q24 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q25 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q26 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q27 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q28 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q29 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
| Q30 | 1 | 1 | 1 | 1 | 1 | 1 |  | 6 | 1 | 1 |
|  |  |  |  |  |  |  |  | S-CVI/AVE | 30 |  |
|  |  |  |  |  |  |  |  | S-CVI/UA |  | 30 |
| Proportion Relevance | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |
| Average proportion of items judged as relevance across the 6 experts | | | | | | | 1 |  |  |  |

1. Experts in agreement: just sum up the relevant rating provided by all experts for each item, for example, the experts in agreement for Q2 (1 + 0 + 1 +1 + 1 + 1 + 1+ 1 + 1 + 1) = 9
2. Universal agreement (UA): score ‘1’ is assigned to the item that achieved 100% experts in agreement, for examples, Q1 obtained 1 because all the experts provided relevance rating of 1, while Q2 obtained 0 because not all the experts provided relevance rating of 1.
3. I-CVI: the expert in agreement divided by the number of experts, for example I-CVI of Q2 is 9 divided by 10 experts that is equal to 0.9.
4. S-CVI/Ave (based on I-CVI): the average of I-CVI scores across all items, for example the S-CVI/Ave [(10 + 9 + 0 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10)/12] is equal to 0.91.
5. S-CVI/Ave (based on proportion relevance): the average of proportion relevance scores across all experts, for example the S-CVI/Ave [(0.92 + 0.83 + 0.92 + 0.92 + 0.92 + 0.92 + 0.92 + 0.92 + 0.92 + 0.92)/10] is equal to 0.91.
6. S-CVI/UA: the average of UA scores across all items, for example the S-CVI/ UA [(1 + 0 + 0 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1)/12] is equal to 0.83.

The definition and formula of I-CVI, S-CVI/Ave and S-CVI/UA

|  |  |  |
| --- | --- | --- |
| THE CVI INDICES | DEFINITION | FORMULA |
| I-CVI (item level content validity index) | The proportion of content experts giving item a relevance rating of 3 and 4. | I-CVI = (agreed item)/(number of expert) |
| S-CVI/Ave (scale-level content validity index based on the average method) | The average of the I-CVI scores for all items on the scale or the average of proportion relevance judged by all experts. The proportion relevant is the average of relevance rating by individual expert. | S-CVI/Ave = (sum of I-CVI scores)/(number of item) S-CVI/Ave = (sum of proportion relevance rating)/ (number of expert) |
| S-CVI/UA (scale-level content validity index based on the universal agreement method) | The proportion of items on the scale that achieve a relevance scale of 3 or 4 by all experts. Universal agreement (UA) score is given as 1 when the item achieved 100% experts in agreement, otherwise the UA score is given as 0. | S-CVI/UA = (sum of UA scores)/(number of item) |

Ringenberg, M. C., Funk, V., Mullen, K., Wilford, A., & Kramer, J. (2005). The Test-Retest Reliability of the Parent and School Survey (PASS). *School Community Journal*, *15*(2), 121-134.

6 respondents with 30 item tests

