

An analysis of the structure of course evaluation items based on ARCS motivation model

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1 Introduction

John M. Keller's ARCS motivation model has been used as a framework for improving teaching strategy and making courses more appealing. It is useful if we have an evaluation sheet based on ARCS model as we can see sufficient and insufficient aspects of a course clearly. However, such a sheet has been developed only for a particular class or courseware, and we have never had a sheet for a general purpose. The objectives of this study were to make a preliminary version of the evaluation sheet and to analyze the structure of evaluation for comparing the presumed structure of motivation based on ARCS model.

2 Method

A questionnaire to evaluate an instructional unit/material was developed based on ARCS motivation model. It consisted of 34 items using 5-point Likert scale, each of which was written to represent one of the ARCS four motivational categories: Attention, Relevance, Confidence, and Satisfaction (see Table 1). Thirteen classes of Language Expression at college freshman level filled out the questionnaire anonymously at the end of the 15-week course, based on their overall impression of the course.

3 Results

A factor analysis was conducted based on 157 responses, resulting in 5 factors. The eigenvalues were 10.07, 2.67, 1.88, 1.75, and 1.47. We took a rotation method of VariMax, and then reached an oblique solution. Factors were named as "Content Value", "Confidence/Satisfaction", "Interest", "Fairness of Evaluation", and "Personal Control." Table 1 shows the oblique solution reference structure. Many items written for the same ARCS category were clustered in a same factor. However, the 5 factors did not match the ARCS four categories perfectly: "Fairness of Evaluation" was independent from other dimensions of C category. "Confidence/Satisfaction" contains items related to both C and S. "Interest" consisted of both A and R items.

4 Discussion

The reason why the final factor structure did not perfectly match the ARCS categories seemed that there were too many evaluation items which confused the students' judgement. But, many items written for the same category were clustered in a same factor, and it is suggested that the ARCS model has practical value as a selection scheme of questionnaire items. To make a final version of the evaluation sheet, redundant items should be deleted. Further research is needed to investigate how structure of students' motivational reactions changes among other age groups and/or styles of instruction.

5 Conclusion

34-item course evaluation sheet was developed and its factor structure was analyzed with 157 responses. Many items were categorized as presumed ARCS classes, but not perfectly. The data will be used to develop a refined version of the sheet.

Table 1 Oblique Solution Reference Structure for Evaluation Items

Presumed Category	Item*	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
A	appealing	0.078	-0.009	0.585	0.025	-0.015
A	fresh	0.396	-0.080	0.078	0.139	0.236
A	not sleepy	-0.278	-0.073	0.426	0.409	-0.130
A	curious	0.082	-0.052	0.628	-0.288	0.229
A	interesting	0.143	-0.012	0.530	0.001	0.272
A	not stereotyped	0.571	-0.253	0.002	-0.022	0.208
A	well processed	0.329	-0.076	0.116	0.051	0.089
R	useful	0.295	0.390	0.195	0.178	-0.148
R	familiar	0.026	0.299	0.535	0.063	-0.238
R	spontaneous	0.000	-0.095	0.349	0.225	0.269
R	relevant	0.311	0.188	0.356	-0.164	0.240
R	high value	0.300	0.300	0.134	0.315	-0.118
R	important	0.434	0.240	0.107	0.072	-0.312
R	process enjoyable	0.344	-0.153	0.233	-0.079	0.402
R	own pacing possible	-0.473	0.096	0.389	0.108	0.352
C	became confident	0.138	0.510	0.080	-0.197	0.086
C	got the knack	-0.162	0.526	0.126	0.139	-0.032
C	clear goal	0.423	-0.004	-0.002	0.131	0.239
C	setting own goal possible	0.341	0.108	0.092	-0.189	0.474
C	stable	0.358	0.376	-0.198	0.084	0.025
C	own progress monitorable	0.111	0.044	-0.071	0.017	0.360
C	controllable	0.069	0.121	-0.034	-0.020	0.531
C	inventionable	-0.028	-0.048	0.232	0.003	0.592
S	satisfactory	0.065	0.211	-0.095	0.150	0.277
S	feel good about	0.078	0.324	0.421	0.149	0.023
S	acquired	0.197	0.523	-0.009	0.003	0.040
S	applicable	0.578	0.284	-0.091	-0.021	-0.005
S	useful	0.592	0.388	-0.001	0.000	-0.083
S	practical	0.438	0.423	0.084	0.060	-0.066
S	praise myself	-0.023	0.612	0.023	-0.176	0.129
S	feel good	-0.082	-0.008	0.392	0.135	0.328
S	fairly evaluated	0.100	-0.022	-0.082	0.620	0.139
S	fair	0.004	-0.106	0.063	0.627	0.000
S	fairly treated	0.124	0.004	-0.121	0.697	-0.010

*Items are expressed originally in Japanese.