

A Ranking-Type Delphi to explore Blended Learning in SMEs

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Abstract:

The report describes an explorative study on blended learning in SMEs. The main goal is to find out whether a list of issues that enable learners in SMEs to use blended learning successfully can be extracted. To investigate this topic, a three round ranking-type Delphi study is conducted. The study involves 5 sub panels that represent the stakeholders in blended learning in SMEs, researchers in the area, developers of e-learning and blended learning, facilitators in blended learning and learners from SMEs as well as from multinationals, as a control group. Concept maps are used to visualize intermediate results. Depending on the input from the participants, the study will reveal diverging or homogeneous views on recommendations how to adapt blended learning to SME learners' needs.

1 Proposed Methodology

1.1 Ranking-Type-Delphi Study

To select a suitable Delphi application we turned to a taxonomy proposed by Day and Bobeva. [9] The Delphi study can be described using their taxonomy. The purpose of the study is exploration of a good mix in blended learning for learners in SMEs. There will be three rounds, one for discovery of issues and the two following rounds to determine the most important issues and to rank them. The participants will be heterogeneous since there will be 5 sub panels of participants with different expertise, researchers and providers of e-learning, online and face-2-face trainers, learners in SMEs and learners in big companies. Within the sub panels we aim at a best possible homogeneity. The study will be conducted as an online survey and all communication will be conducted electronically using e-mail, website and VoIP. We aim at single-blind anonymity of the panelists while conducting the study.

The ranking type Delphi study requires that the researcher focuses on three initial decisions:

1. when to stop polling
2. how many issues to carry over to the next round
3. Use of statistical techniques to support their conclusions

The literature suggests that these answers have to be decided individually, depending on the study design, number of participants, area of interest, etc. We follow Schmidt's [10] and Couger's [11] examples and considered the results of the pre-Delphi.

The polling will stop after round 3. Initially the panelists are asked to list the 6 most important issues in rank order, add a description and a rationale for putting the item on the list. Where panelists use different terms for the same issue the researchers have to provide a summary matching the different terms and one common description of the issue and get this confirmed by the panelists. A ranked, consolidated list is prepared from the results of the first round.

In the second round the panelists rank their “top 20 issues”, ties not allowed, out of the consolidated list of round 1. The second round is aggregated into a list of 20 items for each sub panel for each sub panel.

This 20-item list is presented in the third round as a list with the “Top 10” with ranks from 10 to 1. All other items on the list (11-20) are equally ranked “0”. The panelists now rank their “top 10 issues” from the 20-item list.

The rank is calculated by combining the percentage of selection and relative rankings by the individual participants. An approximation of the mean ranks has been produced by multiplying each percentage of mention by its first-round rank. A combined measure of the ranks in the second and third round provide a value for each item and provide the final evaluation of each item on the 20 item list.

To visualize the results of each round concept maps [12] are provided to enable the participants to get a quick overview of the results, although we are not using the complete process of concept mapping. The statement maps, concept maps which locate the statements in a coordinate plane of highest rank and percentage of agreement, will be prepared for each of the sub panels.

1.2 Processing

We will use Kendall’s rank correlation coefficient, Kendall’s Tau, to measure the agreement between the rankings of two different sub panels in round 2 and 3 and the agreement between the final rankings of each sub panel and the summarized ranking of all participants in round 3. Kendall’s coefficient of concordance is used to find the level of agreement on the relevance of an issue between the sub panels [13]. A high value of W indicates that the panelists tend to agree on the relevance of the item.

$$W = \frac{12 \sum T^2}{M^2 N(N^2 - 1)} - \frac{3(N+1)}{N-1}$$

m – number of panelists
N – number of objects being ranked
T - sums of the ranks for each subject

The final results after round 3 from the individual sub panels will be summarized into a final total ranking list of all panelists.

We will also analyze the agreement between the overall results of all panelists compared to the round 3 results of the individual sub panels. This will show us which sub panels represent most or least correspondence with the panel.

2 Summary

The study will provide us with issues to be considered to make blended learning more suitable for learners in small and medium-sized enterprises. It will provide information whether these results vary strongly between the 5 groups of stakeholders around blended learning in SMEs. A generally high agreement between the sub panels and the final summarized list could indicate an analog assessment across the stakeholders regardless of the background and relation to the topic. Within the sub panels we will analyze the agreements between the participants in that sub panel. A generally high agreement could indicate that the results that can be generalized for the represented sub panel.

The study will give an indication for further research needs towards a good mix in blended learning for small and medium-sized enterprises. The results can be compared to concepts and theories commonly applied to blended learning, such as learning styles, ROI, technology frameworks, obstacles and their relevance for the learner group of learners in SMEs.