main issues relating to technical and operational feasibility of the proposed solutions

quality of decision outcomes - trial 2

Given the problems of consistency in rankings noted above, this outcome is difficult to judge. Conclusions appear to differ between groups, as do degrees of consensus.

3) consensus about decision outcomes- trial 1

Given the lack of feedback between the groups in the time available, it must only be assumed that the subgroup submitting the proposal had at least come to a consensus among its own members

consensus about decision outcomes- trial 2

The group ranking process explicitly provided for an indication of degree of consensus within the group about the ranking finally confirmed. Of those self report groups which had come to a conclusion, it appeared that the degree of consensus was at the level of "strong agreement" or "agreement" (top 2 agreement categories on a 5 point Likert scale). Of the other groups, similar outcomes appeared to be the case but at the subgroup rather than group level.

4) *commitment to decision outcomes -trial 1*

since the feasibility study element of the task had not been completed, it is speculative to comment on each group's commitment to the proposal developed. However, the Swedish groups had demonstrated a degree of commitment to the exercise by successfully completing their proposals.

commitment to decision outcomes -trial 2

from the *consensus* responses above, it can be assumed that the groups who had come to terms with the task would abide by their decision. However a counter argument to this would come from the lack of commitment to changing status of entries from "draft" to "confirmed", or "uncategorised" to "confirmed". The subgroups who entered directly contradictory "confirmed" entries also demonstrated either confusion about group membership, or no commitment to the overall group outcomes.

The evaluation could be extended to consider results in terms of the *New Social Structure* construct (as identified in figure 1 above) under its three categories of *rules, resources and technology-use mediator*. Further work is necessary to determine how best to evaluate outcomes against these headings. However some general comments may be made. The naming standards referred to above, and the reporting and ranking processes adopted in the course of the trial could be regarded as *rules*. The practice of weekly online progress reporting was instituted earlier in the course for AUT students, and this seems to have successfully transferred to a regular practice during the trial itself. The Uppsala students by contrast, were not active or regular in their progress reporting. It appears that for AUT students the practice had become an outcome stabilised as *rules* of acting in future learning situations. This is consistent with the AST model in which "knowledge and experience with structures" leads to "faithfulness of appropriation", "persistent attitudes towards appropriation" and generates therefrom a new set of rules that become part of the social structure. An example of episodic change from a technology-use mediator is given by the redevelopment of the database between the two trials. The process of embedding new structures in the design of the application, or the revision of the common task, or the group establishment process could all constitute such examples.

CONCLUSION AND RECOMMENDATIONS

In the course of these two trials much has been learned about the intricacies of combining IT with learning, research with teaching and linking student groups beyond the traditional classroom boundaries. It is a challenge to organise unbalanced groups of diverse, geographically distant and busy students. It has been suggested that GroupWare is not a "tool" but a "medium", and "new media have been much more difficult to invent, create and operate than new tools" [11]. In the research situation the software is being developed *on-the-fly*, suffers usability problems and lacks the full guides that would accompany a mature product. But more positively, prototyping to accommodate emerging users needs can be demonstrated in a live context.

These undergraduate trials have emphasised the "interdependence of research and teaching" [10]. However the overheads of project and ethical approvals, and the tension between voluntary participation of "subjects" and summative assessment of "students", are very real ones, which require careful management.

Some of the differences and developments between trials have been discussed above, and a theoretical framework proposed against which to conduct and evaluate such learning activities. DeSanctis & Poole [5] suggest analysis using detailed analytic schemes, identifying the degree to which actors *faithfully appropriate* the technology, (i.e. use it in accord with the spirit of its design in order to achieve their goal). However they also note that "simple schemes may do as well as elaborate schemes. Development and debate about ways to codify the social structure of technology and action would appear to be a healthy agenda for researchers" [5].

From an educational perspective these trials have had mixed success. They are certainly not a trivial task, with technical, time, administrative, assessment and student pressures to be overcome. They impose an overhead on a course, requiring considerable extra effort, negotiating skills and management of technical crises and workload peaks. Nonetheless for the collaborating partners they have been a fascinating, and challenging experience, from which

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