BRIEF SUMMARY OF EVALUATION PILOTS (MOODLE)

SEMESTER 2, 2010

An analysis and results of Moodle LMS S2, 2010 survey

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MOODLE S2, 2010

The second iteration of the sub-layer 1 evaluative instrument included several additional questions for subscales 4 and 5 and was aimed at the providing detailed answers to the question regarding the nature of errors experienced by users (see *Refinement of the TELT survey instrument* doc. for more details on the changes made to the original survey). Moodle S2, 2010 pilot had 41 complete responses.

Demographics

The demographics of the S2 pilot differed from S1 pilot in that more staff members participated in this iteration: 8 staff members (19.5% of the responses) and 33 students. It allowed us for several additional comparisons to be made in the body of the analysis. These comparisons will be further discussed in relation to the particular subscales were the differences between the staff and students perceptions were observed.

To ensure that the current sample was different from the original sample we have included a question about previous users' experiences with Moodle as an LMS. Since the university is beginning to introduce Moodle as an LMS, there was a high probability that students who did not participate in evaluative activities previously (during S1) also did not use Moodle. Thus, we have included previous users' experiences question as an indirect measure of the samples overlap. In our case 14 subjects used Moodle before. It could have meant that these participants - 34% were potentially participating in the first round of the survey administration. Taking a positive stance, 66% of responses were definitely original responses.

The other additional question included in S2 survey was related to the users major. Out of 41 participants 30 were taking courses at the Faculty of Arts and Social Sciences (Criminology, Linguistics) and 6 were taking courses at the College of Fine Arts (Design), 5 others were from Engineering and Science including one case of a staff member taking a professional development course. For a future faculties comparison we have used rather a coarse-grained division on FASS – Faculty of Arts and Social Sciences and COFA – College of Fine Arts learners. Other responses were excluded from this subsection of analysis (see *Faculties differences* subsection).

Error experience and related questionnaire items

About a half of participants (41%) experienced errors during the use of application. Our previous evaluative activities demonstrated to what degree an error experience influenced users' perception of the technology (see *TELT educational technologies pilots: brief summary of findings* doc.). In particular, users' perception of the objective features of the system, i.e. a Usability subscale, was significantly lower if they have experienced errors, and this significant difference was affecting all the groups of learners. More than that, the division by groups depending on learners' previous technology experience and personality features was not affecting the final results as much as an error experience. This situation is somewhat contra - intuitive since the Usability subscale was designed to be an objective instrument to measure purely technological (not emotional) aspects of the LMS usage. However, there were no data regarding the nature of errors. If the errors had a technical nature (i.e. inability to upload a file, a link that does not work), it would be quite logical that the error experience influences learners perceptions of an overall technology. Indeed, the inclusion of the clarification sub question in S2 instrument demonstrated that 82% of errors experienced by users were of a technical nature, Fig.1.

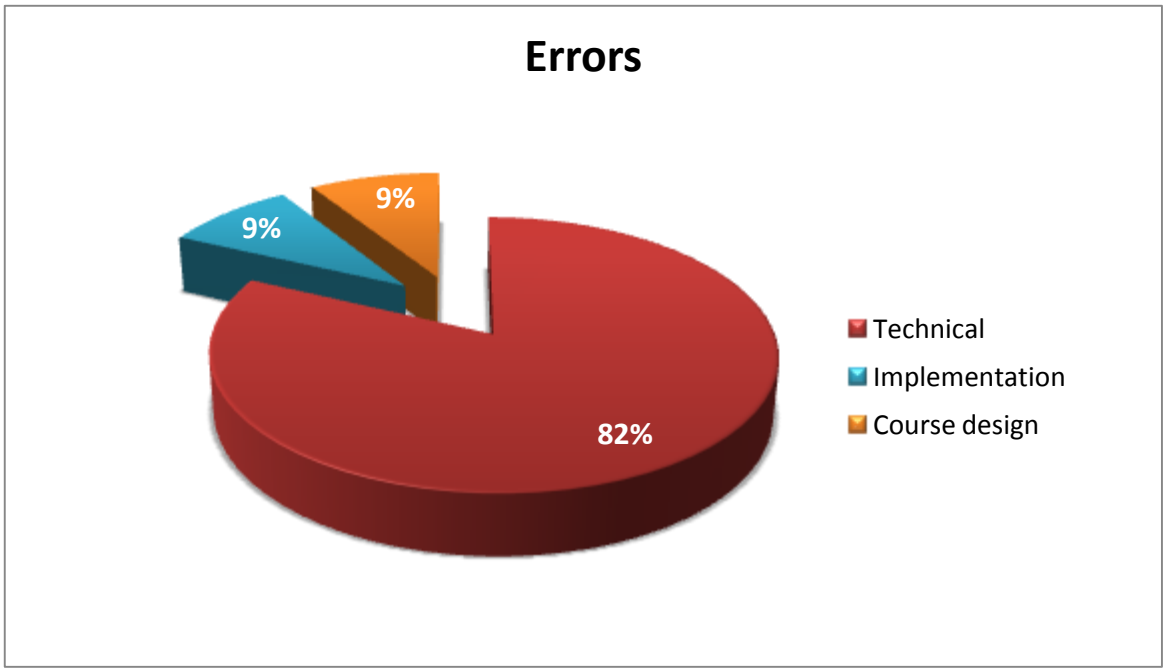


Figure 1: Types of error experience (S2, 2010)

Thus, the users were considering the system having poor technological features / unusable if they experienced technical errors themselves.

This finding clarifies the **unexpected results of the S1 survey Usability subscale**. Overall, the objectivity of learners ratings in regard to the LMS technical characteristics seem to be heavily influenced by the technical errors experienced during the usage of this system.

Previous analysis of the S1 survey items also included one item that was considered to be so heavily dependent on users' error experience that the further analysis of this item was proposed to be carried out individually outside of the five major dimensions analysis (see *Refinement of the TELT survey instrument* doc.). This item was related to the use of documentation and help functions in the application. However, the current results showed that not only this questionnaire item was not related to the error experience but there was no significant difference between different groups of learners in their answers to this item. An overall mean for this item was 3.26 on 7-items scale, which means that the survey participants were not readily referring to help, or disregarded the help options. Regrettably, the group that might have needed help the most was referring to it the least: low prior knowledge learners group had an overall mean of 2.6 which translates into Disagree to Somewhat disagree responses to the question about referring to help and documentation.

SUMMARY OF ERROR EXPERIENCE

Successful functioning and a perceived usability of a technological system are directly dependent on technological, software characteristics and a seamless execution of simple basic operations. If a technical side is at fault, users perceive the system as unusable. It was clearly confirmed by our current findings.

On the other hand learners themselves need to be encouraged in their exploration of the system, because they are not always doing it and referring to the helpful documentation to the full extend. The least technologically proficient groups need to be encouraged toward this type of exploration the most.

GENERAL FINDINGS (DESCRIPTIVES)

The inclusion of additional questions in the survey instrument and refining of the existing questions afforded us more reliable conclusions about the nature of the students' experiences. At the same time, S2 results analysis can be seen as a norm-referenced type of analysis when the answers of the S2 group of students are compared to the original S1 students' answers. Thus, S1 sample is considered to be truly representative of the students' population (Dandapani, 2004) at UNSW. S1 answers also serve as a normative model in relation to S2 answers. In S2, we had a larger group of high prior knowledge* learners (29% of the total) and relatively small number of low prior knowledge† participants (12% of the total) which inevitably influenced the total results by subscale (see Table 1).

An overall interpretation of the total means of subscales should be done with the caution since the high number of high prior knowledge participants could have influenced some of the ratings. For a comparison, the original number of high prior knowledge participants in S1 sample comprised 15% of the total number compared to 29% of the high prior knowledge participants in the current sample. Thus, the percentage of high prior knowledge participants in the original (norm) S1 sample was lower than in the current sample. But the number of low prior knowledge participants rounded to 13% which is similar to the current sample. Hence, the percentages of low prior knowledge participants in both samples were comparable.

Table 1: Means and standard deviations for subscales by participants groups (N = 41)

Scale	Groups means (standard deviations)				
	Group 1	**Group 2**	**Group 3**	**Total**	**
1. Usability evaluation	4.02(.82)	4.94(1.3)	5.19(1.02)	**4.9(1.19)**	↑
2. Feelings toward an application	4.3(1.11)	4.69(1.29)	5.77(.79)	**4.98(1.24)**	↑
3. Resistance to implied authorities in relation to one's teaching and learning*	3.95(.48)	4.07(.67)	4.33(1.02)	**4.14(.77)**	↔
4. Preconceived notions about eLearning	3.8(.87)	4.54(1.06)	5.78(1.08)	**4.83(1.23)**	↑
5. Flexibility of application in relation to one's teaching and learning	3.93(1.12)	5.25(.86)	5.83(.70)	**5.26(1.01)**	↔

* reverse scale
**arrows show the observed S2 means in comparison with S1

In these circumstances group means serve a better indicator of the underlying trends than the total mean for each subscale. To illustrate this idea, we will give a subscale 4 means comparison as an example. Current participants seem to have higher preconceived notions about eLearning (subscale 4). However the comparison with S1 sample shows that low prior knowledge and average learners' means were relatively close to these of S2 low prior knowledge and average learners groups. The reason why the total mean of this subscale is higher for S2 sample is because high prior knowledge learners differed by almost 1 whole interval of a Likert scale (5.00 as an average for S1 and 5.78 as an average for S2). Since the percentage of high prior knowledge learners in S2 sample was higher than in S1 sample the total mean noticeably increased: from 4.54 in S1 sample to 4.83 in S2 sample, but this increase should be totally

* Also referred as techy or tech savvy
† Also referred as not-techy or not tech savvy

attributed to the high preconceived notions about eLearning exhibited by the high prior knowledge group in S2 sample.

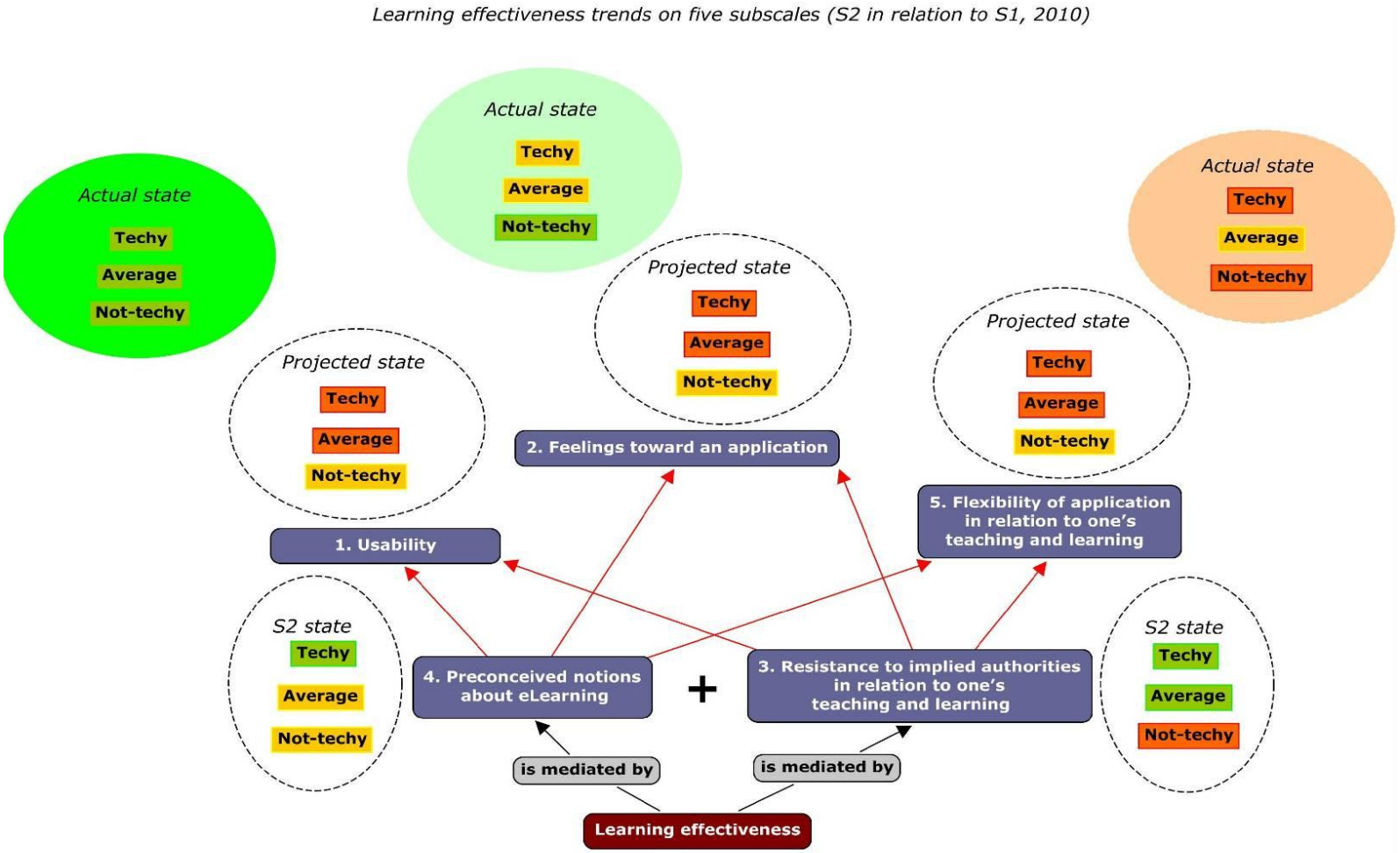
Apart from that, there are several major trends for S2 results:

- All learners groups have higher means in regard to the **usability** of LMS Moodle than the S1 groups means.
- While average and high prior knowledge learners **feelings toward an application** are somewhat comparable to the S1 group means, low prior knowledge learners rated their feelings toward an application much higher which resulted in a higher overall total for S2 results.
- Low prior knowledge learners in S2 had higher scores in their **resistance to implied authorities in relation to the teaching and learning**. Since it is a reverse scale, higher scores signify lower resistance. However, average and high prior knowledge learners had lower scores and higher resistance than comparable groups of learners in S1. Since low prior knowledge learners were less resistant, but average and high prior knowledge learners more resistant the total mean of this subscale is similar to S1.
- As it was already mentioned, learners' **preconceived notions about eLearning** were somewhat similar for low prior knowledge and average learners groups in S1 and S2. However, high prior knowledge learners' notions were much higher for S2. As a result, a total mean in regard to the preconceived notions about eLearning is higher for S2 than for S1.
- **Flexibility of application in relation to one's teaching and learning** subscale has a comparable to the S1 total mean. However, there are several underlying trends that should be explained. Average learners rated the flexibility of application similarly to S1 group. But low prior knowledge and high prior knowledge learners had somewhat lower opinion about the flexibility of Moodle in comparison with their counterparts in S1. Overall, the current sample composition allowed for an overall mean to stay the same, but high resistance to the implied authorities of low prior knowledge learners and high preconceived notions about eLearning of high prior knowledge learners could have influenced their somewhat lower ratings of the flexibility.

DISCUSSION OF GENERAL FINDINGS

Semester 2 results are related to semester 1 results in terms of the normative measurements used (subscales or factors 1 to 5). Subscales 1 to 5 represent different facets of the learning effectiveness and are interrelated. In particular, subscales 3 and 4 ratings are somewhat negatively related to subscales 1, 2 and 5 results. At the same time, subscales 3 and 4 ratings represent a given population, they are not conditional upon the quality of learners current experiences but rather represent learners' previous experiences. As a result, having slightly different learners' population in S2 translates into **expected** differences for subscales 1, 2 and 5 results. Next, these expected differences are weighted toward the actual differences found in participants' responses and the conclusions regarding the overall learning effectiveness trends in regard to Moodle can be drawn out of this comparison, Fig. 2. As we can observe, an actual state of affairs in regard to the usability and feelings about the application is better or somewhat better than expected. However, flexibility dimension might require future work, especially with low prior knowledge learners group. These general conclusions are further explained and explored in details in the following sections of this document and item-by-item analyses.

Figure 2: Graphic representation of the observed statistical trends



Learning effectiveness is mediated by factors 3 and 4. Factors 3 and 4 are negatively related to factors 1, 2 and 5. Factors 3 and 4 are additive in their influence on factors 1, 2 and 5. Factors 3 and 4 reflect a given, i.e. how the population look like in comparison with semester 1 population. For example, techy learners have higher preconceived notions about eLearning (green), and average and not-techy learners have similar to the semester 1 learners preconceived notions about eLearning (yellow), or not-techy learners is lower in their resistance to implied authorities in S2 in comparison with S1 (red). Since the relation is negative and factors 3 and 4 are additive in their influence there is a high chance that techy and average learners groups rate factors 1, 2 and 5 lower than semester 1 learners (red), while not-techy learners rate these factors somewhat similar to S1 ratings.This is reflected in a projected state for each factor. Actual state reflects actual ratings and the interpretation of theresults (green - positive; orange - needs further work).

The general trend observed with the usability subscale (subscale 1) suggests that one or more groups of learners had a higher opinion about Usability features of Moodle LMS during S2, 2010 evaluation in comparison with S1, 2010. Indeed, a further comparison of S1 and S2 clearly demonstrates that all the groups of learners – from weakest, low prior knowledge participants to technically savvy gurus rated usability somewhat higher.

Further breakdown by groups suggests that there were no significant differences between the **staff and students** perception of Moodle usability: $t(39) = .042$, *ns*.

But…as it was discussed above, **error experience** had a marginally significant main effect on participants' answers to usability questions $F(1, 32) = 2.95$, $p < .10$. Thus, similar to S1 results, the objectivity of the usability evaluation was compromised by the participants' error experience. Fig. 3 reflects that the error experience was especially harmful for average and high prior knowledge learners' perceptions of Moodle.

Further analysis of these findings showed that three of the nine subscale items (see *Refinement of the TELT survey instrument* doc. for a further description of the items) were attributing to this marginal significance of the errors experience influence on usability ratings.

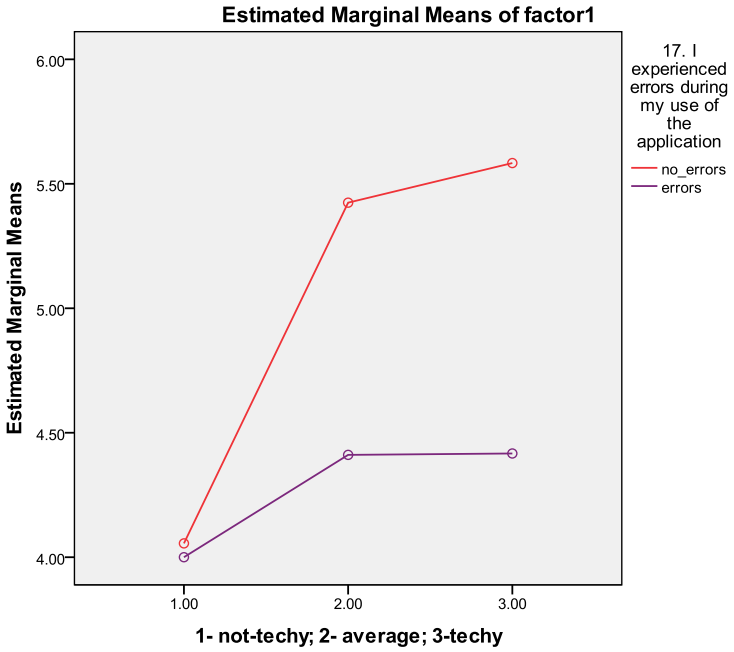


Figure 3: Perceptions of Moodle usability by learners' groups and learners' error experience

These three items were questions about the look and feel of the application, problems experienced during the use of the application and the necessity of using the application as a part of one's course. While two of the above items had a rather typical pattern with all the groups rating their error experience as detrimental, an item rating the look and feel of the application had a particularly strong effect on high prior knowledge learners, Fig. 4. The average and the low prior knowledge learners rating patterns look somewhat typical, but high prior knowledge learners' ratings differ drastically depending on error experience (group mean of 3.00 for learners that have experienced errors and group mean of 5.54 for those who did not). Technical errors are seen as unacceptable by this learners group.

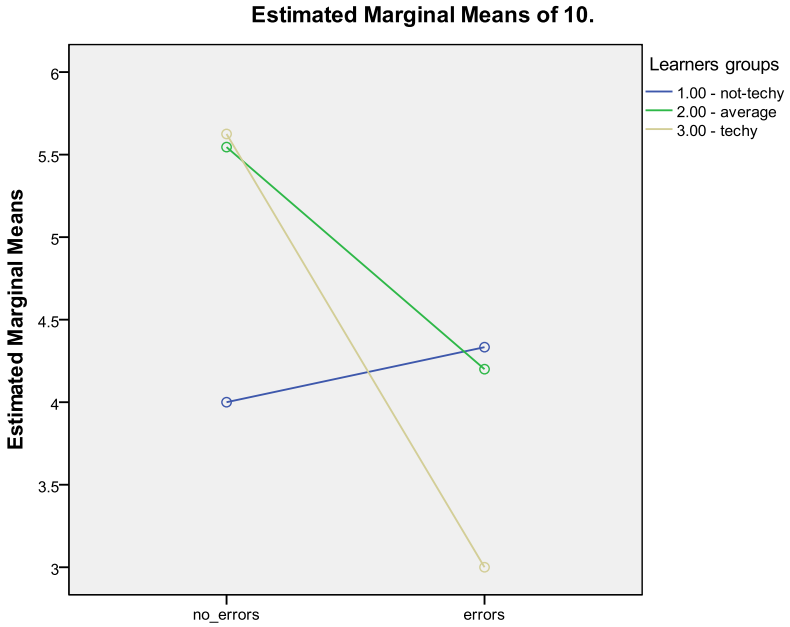


Figure 4: Effect of error experiences on different learners groups (usability subscale)

As it was already mentioned there were nine items / questions in the usability subscale. The multivariate analysis of variance (MANOVA) with these nine items as dependent variables showed that the group membership was a significant factor in participants usability ratings, Wilks' $\lambda(18, 60) = 1.80$, $p = .047$. But further analysis revealed that all this multivariate significance could be attributed to the participants' answers to three questions (question about the integration of the information and resources with one's teaching or learning style; question about the process of accessing the information; question about usefulness of the application for other users). Thus, the group membership influenced these three items. Question about the integration of the information and resources with one's teaching or learning style provoked a strong reaction from the side of the low prior knowledge learners (group mean = 2.67 on 7 items Likert scale) in comparison with average(group mean = 5.00) and high prior knowledge (group mean = 5.23) learners. Low prior knowledge learners were significantly less comfortable with the way the information and resources within the application integrate with their own teaching or learning style in comparison with the average ($p < .001$) or high prior knowledge learners ($p < .001$). This result pattern is similar to the pattern obtained for S1 survey results for this item. Question about the process of searching for, finding and accessing the information had a similar pattern when low prior knowledge learners (group mean = 3.33 on 7 items Likert scale) were less intuitive in their ways of accessing the information using Moodle than the average ($p = .093$) or high prior knowledge learners ($p = .035$). In difference of S1 pattern there were no significant differences between average and high prior knowledge learners ($p = .692$). Question about the usefulness of the application for the other learners showed a different perception of the situation only by low prior knowledge and high prior knowledge learners ($p = .058$). At the same time all the group means were above scale average group mean = 4.00 for low prior knowledge learners to group mean = 5.69 for high prior knowledge learners. In difference of S1 pattern there were no significant differences between average and high prior knowledge learners ($p = .520$) or a significant differences between low prior knowledge and average learners ($p = .216$).

FEELINGS TOWARD AN APPLICATION

The general trend observed with the feelings toward an application subscale (subscale 2) indicate that low prior knowledge learners group had much better feelings about Moodle LMS in S2, 2010 evaluation in comparison with S1, 2010. As a result, the current subscale 2 mean is higher than the subscale 2 mean in S1.

In difference to the results of the S1 survey and our projections, **error experience** was not a significant factor in participants' ratings of their feelings toward an application. This finding is quite surprising, especially taking into consideration S1 findings where error-experience was an influential factor in regard to participants' feelings about the application. At the same time, participants' prior technical experience had a significant influence on ratings of their feelings toward an application, $F(2, 31) = 4.06$, $p = .027$. High prior knowledge learners had more positive outlook on Moodle than average ($p = .036$) and low prior knowledge ($p = .055$) learners.

Further breakdown by groups suggests that there was also a significant difference between the **staff and students** feelings about Moodle: $t(39) = 2.28$, $p = .037$. Staff members had much warmer feelings about Moodle (group mean = 5.56) than students (group mean = 4.69). Again, after performing general statistical analysis procedures, we followed with a further breakdown of group differences by item.

There were four items / questions in the usability subscale (see *Refinement of the TELT survey instrument* doc. for a further description). The multivariate analysis of variance (MANOVA) with these four items as dependent variables showed that the group membership was a marginally significant factor in participants feelings about the application, Wilks' $\lambda(18, 60) = 2.00$, $p = .058$. Further analysis revealed that this group difference could be attributed to the participants' answers to three questions (question about feeling apprehensive in using the application; question about the integration of the application features and content with one's teaching and learning style; and, partially, question about distracting tasks in the application). Two questions reflected similar patterns when high prior knowledge learners felt less apprehensive in using the application than the average ($p = .037$) and the low prior knowledge ($p = .018$) learners; more confident in how the application features and content integrate with their teaching and learning style in comparison with the average ($p = .096$) and the low prior knowledge ($p = .005$) learners. This pattern was somewhat similar to the pattern exhibited by these participants' groups in S1. However, the pattern found for distracting tasks in the application was different from S1 results: although the answers to this question contributed to the significance of the group differences for feelings subscale (univariate $F(2, 38) = 2.83$, $p = .071$), the post-test did not indicate any significant differences between the learners groups. The overall graphic pattern was similar to those of the previous two questions with high prior knowledge learners feeling the number of irrelevant and distracting tasks was low and the average and the low prior knowledge learners feeling this number was somewhat higher.

RESISTANCE TO IMPLIED AUTHORITIES

The general trend observed with the resistance to implied authorities (subscale 3) shows more homogenous respondents population and less variance in respondents answers to the resistance to implied authorities questions in comparison with S1. Groups' means range from 3.95 for low prior knowledge participants to 4.33 for high prior knowledge participants in comparison with S1 3.52 to 4.75. As a result, lower resistance of low prior knowledge

participants and higher resistance of high prior knowledge participants are not clearly visible with the overall mean of the subscale being comparable to the S1 overall mean.

There were no significant differences between the **staff and students** resistance to the implied authorities in relation to their teaching or learning: $t(39) = 1.4$, *ns*. Staff was somewhat less resistant (group mean = 4.44) than students (group mean = 4.02). However, this result could be better explained by the strong resistance to implied authorities of the COFA high prior knowledge learners (see *Faculty Differences* subsection) than by students/staff breakdown.

Similar to the results of S1 survey, participants' **error experience** in the use of the application was not affecting the resistance to the implied authorities factor. It is interesting to note that participants' prior technical experience was not significantly influencing this factor either. On the other hand, learners' knowledge of their own learning or teaching style should not be dependent on technology but rather on an experience with self-regulated learning activities and prior educational background.

The resistance to implied authorities subscale included four items / questions (see *Refinement of the TELT survey instrument* doc. for a further description). The multivariate analysis of variance (MANOVA) with these four items as dependent variables showed that the group membership was not a significant factor in participants ratings, Wilks' $\lambda(8, 70) = .699$, *ns*; thus, the further item by item analysis was not conducted. This finding is not specifically surprising taking into consideration homogenous group means discussed above. The small number of participants could also have been a reason for the lack of observable groups differences on this subscale.

PRECONCEIVED NOTIONS ABOUT ELEARNING

The general trend observed with the preconceived notions about eLearning subscale (subscale 4) indicate that low prior knowledge and average learners groups had somewhat similar ratings of the preconceived notions but high prior knowledge learners rated their preconceived notions higher then high prior knowledge learners in S1 survey.

As it was expected, and similar to the results of S1 survey, **error experience** was not a significant factor in participants' ratings of their preconceived notions about eLearning. The only factor influencing the results was participants prior technical experience - $F(2, 31) = 6.95$, $p = .003$. High prior knowledge learners had significantly higher preconceived notions than average ($p = .01$) and low prior knowledge ($p = .005$) learners.

There were no significant differences between the **staff and students** preconceived notions about eLearning: $t(39) = -1.46$, *ns*. Students had somewhat higher preconceived notions (group mean = 4.93) than staff (group mean = 4.25). However, similar to subscale 3 results, this result could be better explained by faculty differences (see *Faculty Differences* subsection) than by students/staff breakdown.

The preconceived notions about eLearning subscale included three items / questions (see *Refinement of the TELT survey instrument* doc. for a further description). The multivariate analysis of variance (MANOVA) with these three items as dependent variables showed that the group membership was a significant factor in participants preconceived notions about eLearning, Wilks' $\lambda(6, 72) = 3.17$, $p = .008$. Further analysis revealed that all three items contributed to the overall multivariate significance in this subscale analysis. However, the group patterns were slightly different for individual items. Questions about eLearning helping in construction of new knowledge and encouraging collaboration had a typical pattern with high

prior knowledge learners feeling that eLearning helps them more in construction of new knowledge than the average (p = .003) and the low prior knowledge (p = .007) learners, the difference between the average and low prior knowledge learners was not significant; and with high prior knowledge learners feeling that eLearning encourages collaboration more than the average (p = .055) and the low prior knowledge (p = .03) learners, again, the difference between the average and low prior knowledge learners was not significant. Meanwhile, a question about effective acquisition of practical knowledge demonstrated a significant group differences only between high prior knowledge and low prior knowledge groups (p = .019); other differences were not significant. These patterns were slightly different from S1 patterns where average learners did not differ significantly from high prior knowledge learners but both these groups differed from the low prior knowledge group. The explanation for these patterns lays in the *General findings* subsection discussed above: while the low prior knowledge and the average learners' groups ratings for a subscale 4 were somewhat similar to the S1 ratings, high prior knowledge participants preconceived notions were somewhat higher than in S1 survey. Thus, any difference between the high prior knowledge learners and the other groups was more pronounced in S2 survey.

FLEXIBILITY OF THE APPLICATION

The general trend observed with the flexibility of the application in relation to one's teaching and learning subscale (subscale 5) indicate that the average learners group had somewhat similar to S1 rating on this subscale. However, low prior knowledge and high prior knowledge learners rated the flexibility somewhat lower than low prior knowledge and high prior knowledge learners in S1 survey.

Comparing the **staff and students** ratings of the flexibility, we could observe a marginally significant difference between these groups, $t(39) = 1.96$, p = .058. Staff members rated the flexibility of the application higher (group mean = 5.79) than students (group mean = 5.05).

Depending in which learners group the learners were, **error experience** was influencing or not influencing their perception of the Moodle flexibility. In statistical terms, we observed a marginally significant interaction of the participants' group and their error experience, $F(2, 32) = 2.7$, p = .083. This finding seems to be counterintuitive but high prior knowledge learners that have experienced errors rated Moodle flexibility higher than high prior knowledge learners that did not run into any errors, Fig. 5. The average and low prior knowledge learners, on the other hand, were rating the flexibility of the application higher if they did not experience any errors. Discussing the main effect of the group membership, we could also notice that low prior knowledge learners rated the flexibility significantly lower than the average (p= .007) and high prior knowledge (p< .001) learners. Further analysis of these counterintuitive findings showed that two of the three subscale items (see *Refinement of the TELT survey instrument* doc. for a further description of the items) were actually demonstrating how high prior knowledge learners rate the flexibility higher when they experience errors, Fig.6. Thus, experiencing technical errors and working through these errors

Experiencing technical errors and being able to work through these errors serves a true measure of the flexibility of the application for tech savvy learners

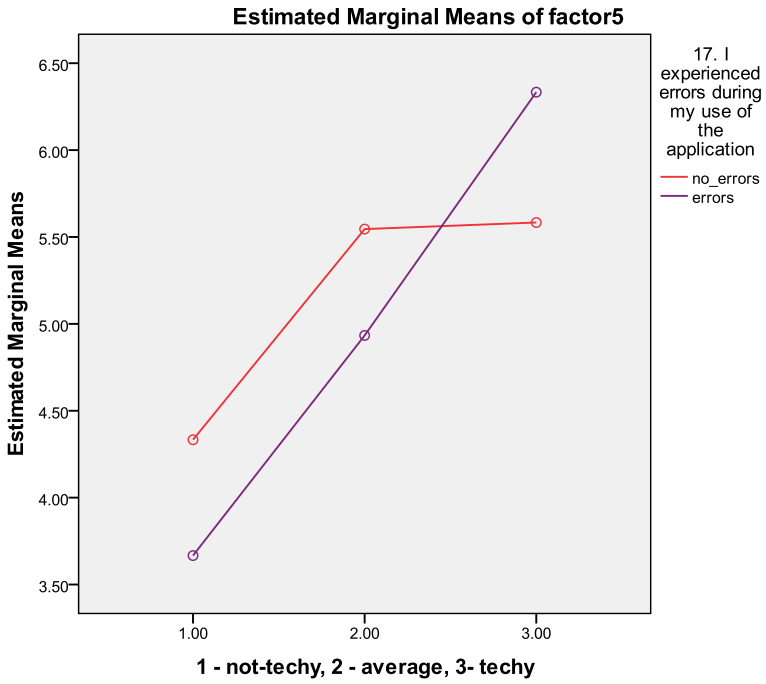


Figure 5: Perceptions of Moodle flexibility by learners' groups and learners' error experience

seems to serve a good measure of the flexibility of the application for high prior knowledge learners. An alternative explanation would be: the errors were resulting from high prior knowledge learners "playing" with the application. However, this explanation calls for a similar pattern on all the three subscale items which is not correct. An actual item about the understanding of the application did not have an interactional pattern: errors only slightly influenced low prior knowledge learners' ratings.

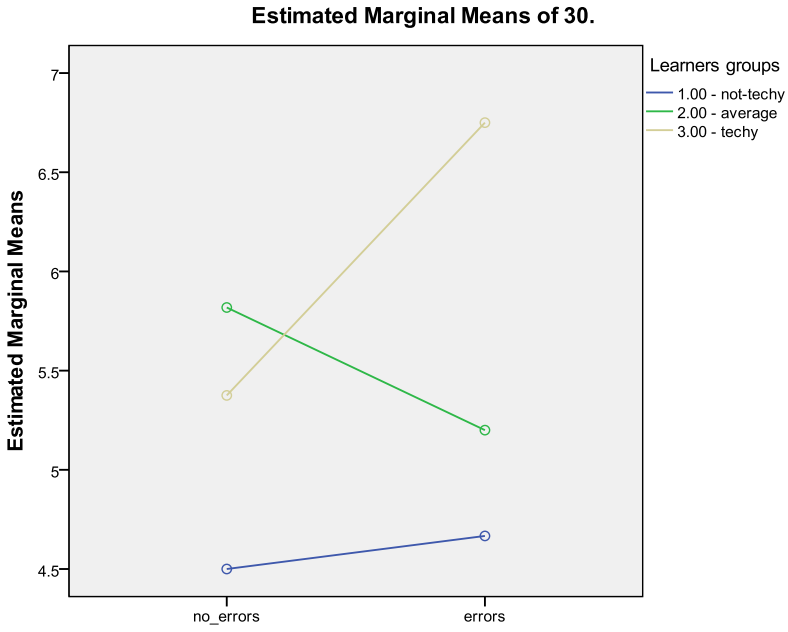


Figure 6: An example of an interactional pattern (one of the flexibility subscale items)

As we have mentioned, the flexibility of application in relation to one's teaching and learning subscale included three items / questions). The multivariate analysis of variance (MANOVA) with these three items as dependent variables showed that the group membership was a significant factor in participants ratings of the flexibility, Wilks' $\lambda(6, 72) = 5.55$, $p < .001$. Further analysis revealed that the multivariate significance could be attributed to the participants' answers to one question (question about the understanding how the application integrates with one's teaching and learning) and partially attributed to participants answers to two other questions (the importance of keeping the application flexible and the direct rating of the application's flexibility). Thus, the group membership influenced or at least partially influenced these three items. In answering the question about the understanding how the application integrates with one's teaching and learning low prior knowledge learners had significantly less understanding than the average ($p < .001$) or high prior knowledge learners ($p < .001$). And the average learners had somewhat less understanding than high prior knowledge learners ($p < .054$). This result pattern is similar to the pattern obtained for S1 survey results for this item. Regarding two other questions (the importance of keeping the application flexible and the direct rating of the application's flexibility), the only partially significant group difference was between high prior knowledge and low prior knowledge learners ($p < .10$ in both cases). The average learners were relatively close in their responses to the high prior knowledge learners (group means = 5.5 and 5.77 accordingly) in a question about the importance of keeping the application flexible –these ratings are somewhat lower than ratings for this item obtained in S1 survey. The other question - the direct rating of the application's flexibility had a typical pattern when high prior knowledge learners were rating the application higher than average learners; and the average learners in their turn were rating the application higher than low prior knowledge learners.

FACULTY DIFFERENCES

S2, 2010 survey included representatives of different faculties. We had a small sample (6 participants) from COFA and a bigger sample (30 participants) from FASS. The other 5 participants belonged to various faculties and were excluded from the faculties' differences analysis. It is interesting to note that COFA representatives taking part in a current survey included only average and high prior knowledge learners. Low prior knowledge group included FASS representatives and is further marked on all figures as a single mean point with the main comparison taking place between average and high prior knowledge learners from two different faculties.

Regarding usability evaluation there were significant difference between the average and high prior knowledge learners $F(2, 31) = 4.70$, $p < .05$. Moreover, the observed differences could be attributed not only to the learners prior technical experience but to the faculties they belonged – marginally significant interaction $F(1, 31) = 3.43$, $p = .074$. Depending on the faculty membership (FASS or COFA), participants with the similar level of prior technical experience had different perceptions about the usability of Moodle. While average and high prior knowledge learners from FASS and high prior knowledge learners from COFA were somewhat similar in their ratings of usability, average learners from COFA rated Moodle usability somewhat below average ($M = 3.47$) which is low even comparing to S1, 2010 results (see Fig. 7). Was this unpleasant experience related to a course design, or being fine arts major, participants are somewhat more demanding and have higher expectations from LMS than learners in the other faculties? On the other hand, this finding can have a pretty simple explanation if we look at usability ratings through the prism of learners preconceived notions about eLearning. Average learners from COFA had higher preconceived notions about eLearning than high prior knowledge learners from COFA. Taking into consideration their own level of

technical preparation these expectations could have been somewhat unrealistic which generated the trend reflected in Fig. 7.

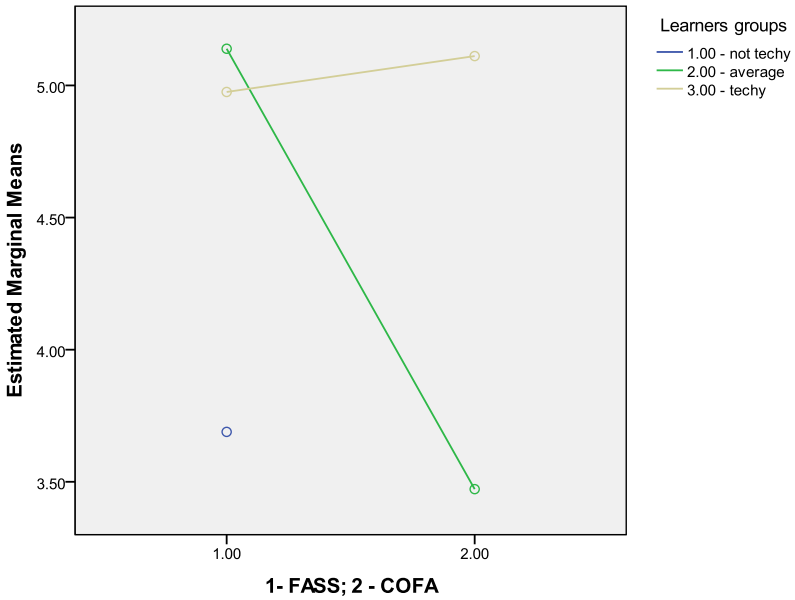


Figure 7: Learners' usability experiences by learners' groups and learners faculty membership

Regarding participants feelings toward an application, the results of this subscale reflected the following trend: learners with the higher level of technological proficiency rated their feelings toward an application higher - $F(2, 31) = 5.91$, $p < .05$ than the average learners. However, no effects of belonging to the different faculties were observed for participants in regard to their feelings toward an application.

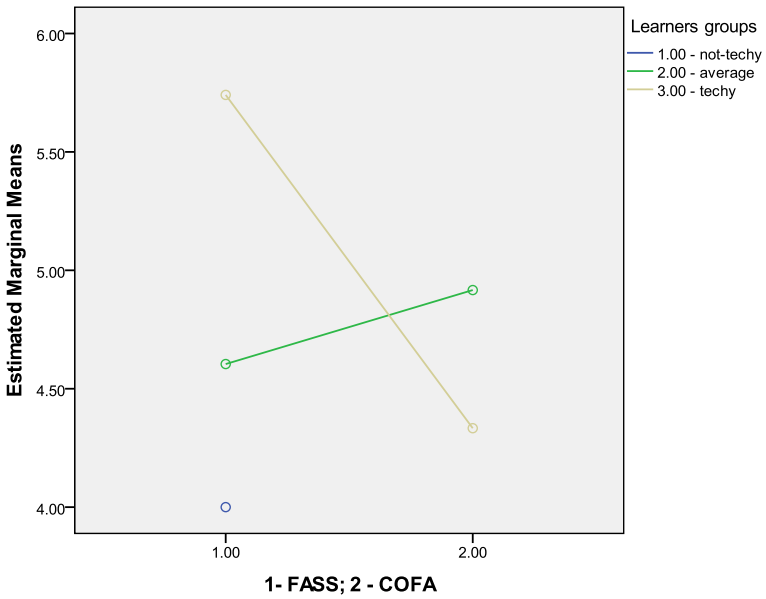


Figure 8: Learners preconceived notions about eLearning by learners' groups and learners' faculty membership.

Regarding participants resistance to the implied authorities, there were no significant differences between participants with different levels of prior technical experience or belonging to different faculties. Exhibited graphic trends were similar to the preconceived notions about eLearning results (see Figure 8) but not statistically significant. In particular taking into consideration that resistance is on a reverse scale, high prior knowledge learners at COFA (group mean = 3.63) were more resistant to implied authorities than any other group, and high prior knowledge learners at FASS (group mean = 4.33) were less resistant than any other group.

Regarding participants preconceived notions about eLearning, prior technical experience was an important factor in participants preconceived notions, as it was expected. High prior knowledge learners on average had higher expectations from eLearning experiences than average learners - $F(2, 31) = 3.23$, $p = .053$. However, this picture was not as homogenous as we could assume. While high prior knowledge learners in FASS had higher preconceived notions about eLearning in comparison with average learners, average learners in COFA had higher preconceived notions about eLearning in comparison with their high prior knowledge counterparts - $F(1, 31) = 3.54$, $p = .069$ (see Fig. 8). This marginally significant interaction also demonstrates that high prior knowledge learners from FASS had high preconceived notions about eLearning, and it seems Moodle usability features satisfied their high level expectations (see Fig. 7 for comparison).

Regarding participants' perception of the flexibility of application in relation to their teaching and learning the only observed difference was related to participants' prior technical knowledge. Both high prior knowledge and average learners were rating Moodle as significantly more flexible than low prior knowledge learners, $F(2, 31) = 11.47$, $p < .001$. There was no significant influence of the faculty membership on flexibility ratings. A brief comparison summary is presented in Table 2.

Table 2: Inter-faculty comparison summary, S2, 2010

Subscale	Was faculty membership a significant factor?	Comparison outcome
1. Usability	Yes	Average learners from COFA and low prior knowledge learners from FASS rated the usability lower than the other learners groups did.
2. Feelings toward an application	No	High prior knowledge learners rated their feelings higher than average and low prior knowledge learners.
3. Resistance to implied authorities in relation to one's teaching and learning	No	No observed significant differences.
4. Preconceived notions about eLearning	Yes	Average learners from COFA and high prior knowledge learners from FASS had higher preconceived notions than high prior knowledge learners from COFA and average learners from FASS.
5. Flexibility of application in relation to one's teaching and learning	No	High prior knowledge and average learners rated the flexibility higher than low prior knowledge learners.

DISCUSSION OF FACULTY DIFFERENCES

While only two faculties were available for a comparison, we could observe several interesting tendencies in regard to their responses. Thus, instructional recommendations for these faculties would also differ:

- While COFA learners with the average level of technical experience seem to be quite critical of Moodle usability features, their own expectations of eLearning environments should be adjusted to more realistic level. Alternatively, COFA could utilize a custom eLearning tool for all its courses (**NB:** financial issues related to this decision are considered to be outside of the scope of the current document)
- FASS has rather typical problems with not technically proficient learners being overly critical of eLearning possibilities. The faculty could benefit from several compulsory tech skills checks and free tech tutorials.

REFERENCES:

Dandapani, S. (2004). *A textbook of advanced educational psychology* (3rd Ed.). New Delhi, IN: Anmol Publications Pvt. Ltd.