20110615 - Ergonomization needs of student pilots

[<Normal page] [**PEREZGONZALEZ Jose D (2009**[3]**).** *Ergonomization needs of student pilots.* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 48-51].]

Ergonomization needs of student pilots

Perezgonzalez & Lee explored the ergonomization needs of student pilots in 2009[1]. They asked a group of student pilots which technological features they wanted to have when flying (with costs also included as part of those features). They also asked them how much they valued the selected features.

Extended research results are presented in table 1.

Overall, the student pilots valued highly technological features that helped them with their flying (eg, onboard display of navigation charts, airspace awareness functionality, pre-flight route planning, and TCAS functionality), low running costs, post-flight analysis displayed on navigation charts, and equipment portability.

Table 1. Relative importance of ergonomization features to student pilots[2]		
technological feature	**mean**[*]	*interpretation*
Onboard display of navigation charts	4.0	important
Airspace awareness functionality	3.9	important
Low operational costs	3.9	important
Post-flight feedback on navigation charts	3.8	important
Pre-flight route planning functionality	3.6	important
TCAS functionality	3.6	important
Weather and airspace planning support	3.5	important
Onboard display of track flown	3.5	important
Portability	3.5	important
Real-time onboard monitoring	3.4	medium importance
Onboard display of route to follow	3.4	medium importance
Onboard display of elevation	3.4	medium importance
Low set up costs	3.4	medium importance
Post-flight feedback on satellite maps	3.1	medium importance
Post-flight feedback of elevation flown	3.1	medium importance
Real-time remote monitoring	2.9	medium importance
Onboard display of satellite maps	2.9	medium importance

Recording of flight parameters per second	2.8	medium importance
Full communication capabilities	2.7	medium importance
Post-flight feedback in 3-D	2.6	medium importance
Onboard 3-D displays	2.5	medium importance
Autonomy	2.3	little importance
Recording of multiple flight parameters	2.2	little importance
Full post-flight video playback functionality	2.0	little importance
Post-flight video playback capability	1.6	little importance
Fleet monitoring functionality	1.5	little importance
Onboard display of street maps	0.8	very little importance
Post-flight feedback on street maps	0.6	very little importance
*average value out of 5		

Methods

Research approach

- This was an exploratory study of student pilots' valuation of new technologies (typically integrated in the so called glass-cockpit).

Sample

- A convenient sample of 17 student pilots. The group comprised New Zealand student pilots who already had obtained their private pilot licences (PPL) and were on a continuation course towards their air transport pilot licences (ATPL). These pilots had also completed at least one navigational flight requiring them to fly solo over long distances. Both requirements were important as they allowed the student pilot some experience from which to draw an opinion regarding the technological features under research.
- Of relevance here is that these students did not have experience with a glass-cockpit, but with a conventional one, so most of them had no direct experience with the technological features under research (although some students may have had access to some of them by way of bringing their own third-party technologies, such as smartphones or laptops with flight support programs installed, into the cockpit).

Materials

- A questionnaire with a list of 28 technological features, collated from observing three different GPS-based technologies used in aviation or with aviation applications: a real-time fleet tracking technology (Spidertracks), an iPhone application for tracking flight parameters for post-flight analysis, and a flight management system application which runs on Microsoft Windows-capable devices.
- The questionnaire required first a dichotomous (yes/no) selection of features deemed relevant, and, secondly, an assessment of the relevant features on a five-anchor Likert scale running from '1, very little importance' to '5, very important'. (In practice, the procedure made for a six-anchor Likert scale, with '0' standing for those features not deemed relevant and meaning 'not important at all'. Results, thus, average values between 0 and 5.
- A last question asked the students to choose which of the three technologies they would purchase if they had the capability of doing so.

Procedure

- Students were approached and invited to participate in the research in the last half-hour of a normal class.
- They were given a presentation of the different technologies and their relevant features, including a comparison vis-a-vis between them.
- After the presentation, they were invited to fill in the questionnaire.

Data analysis

- Univariate quantitative analysis (namely descriptive analyses), using SPSS version 14.

Generalization potential

Given the exploratory approach of the research and the small sample and its convenience, the results from this study may not have enough scope for generalization. They could be indicative of similar attitudes in the following 'populations' (in order of decreasing generalization power):

- Future student pilots from the same school reaching a similar level of training and exposure to new technologies.
- Student pilots in New Zealand.
- Student pilots elsewhere.

References

1. **PEREZGONZALEZ Jose D & Seung Yong LEE (2009a).** *New technologies for the student pilot.* Aviation Education and Research Proceedings (ISSN 1176-0729), volume 2009, pages 10-11.
2. **PEREZGONZALEZ Jose D & Seung Yong LEE (2009b).** *New technologies for the student pilot (Conference presentation).* Aviation Education and Research Conference, 2009 (July), Blenheim (New Zealand).
+++ **Footnotes** +++
3. Adapted with permission from **PEREZGONZALEZ Jose D (2009).** *Ergonomization needs of student pilots.* AviationKnowledge (ISSN 1179-6685), 2010, page 6.]

Want to know more?

AviationKnowledge - Ergonomization
This AviationKnoweldge page offers links to further information on aviation ergonomization.
Perezgonzalez & Lee's (2009) abstract
The original abstract can be found under the "2009 Symposium Proceedings" tab, as PEREZGONZALEZ Jose D & Seung Yong LEE (2009a). *New technologies for the student pilot.* Aviation Education and Research Proceedings (ISSN 1176-0729), volume 2009, pages 10-11.

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