

Students' Feedback after Studying Online Courses Reflecting Individual Learning Styles

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Abstract

The paper provides results of monitoring students' satisfaction with studying in online courses reflecting individual learning styles. Data were collected by the questionnaire using the Likert scale for evaluation of statements where students expressed their satisfaction with the process of instruction they were provided with.

Keywords: tertiary education; learning styles; individualization, pedagogical experiment; questionnaire; feedback

1. Introduction

The learning style theory and practice has been accepted as a powerful didactic tool by some authors [1]. Since 2010 the research project "A flexible model of ICT-supported process of instruction reflecting individual learning styles" has been solved at the Faculty of Informatics and Management, University of Hradec Kralove, Czech Republic. The main objective of the research is to verify whether tailoring the process of instruction in online courses to learner's preferences results in improving students' knowledge in comparison to the traditional teacher's style led instruction [2], [3]. The project is structured into four phases: (1) detecting students' individual learning styles; (2) designing the online course "Library services – Information competence and edu-

cation" in three versions reflecting (a) students' individual learning style, (b) teacher's style of instruction and (c) monitoring the process of instruction managed by each student individually; (3) running the pedagogical experiment to verify or reject the hypothesis that tailoring the process of instruction to student's preferences results in better knowledge expressed in higher test scores; (4) monitoring students' feedback after the process of instruction. The questionnaire focused on phase four of the process. Study materials in the online course were prepared in six forms: full texts providing detailed information; short texts structured for the distance form of education, where the structure of the material aspires to simulating the traditional, face-to-face process of instruction; PowerPoint presentations; animations; video-recorded lectures; links to additional sources and other types of study materials.

2. Research methodology

The sample group consisted from nearly 400 respondents from the Faculty of Informatics, University of Hradec Kralove. The course was designed in three versions: (1) Students in the experimental group 1 (group LCI) were offered such study materials, exercises, assignments, ways of communication and other activities which suit their individual learning styles detected by the Learning Combination Inventory (LCI). The preferred order

of materials was made electronically by an application which automatically generates the “offer“, i.e. it provides each student with types of materials appropriate to his/her learning style. (2) Students in experimental group 2 had access to all types of materials (CG – content general) and the process of selection the appropriate type was the matter of individual decision (group CG). (3) Students in the control group (group K) studied under traditional conditions, when their course was designed according to the teacher’s style of instruction which they were made to accept.

Before the process of instruction started, individual learning style of each respondent was detected by the C. A. Johnston’s Learning Combination Inventory (LCI) [4]. The inventory contained 28 multiple-choice questions and three open-answer ones and provides a “pattern“ of individual style of learning which presented the combination of four approaches to processing information, i.e. it defined the Sequential, Precise, Technical and Confluent Processors.

The structure of research groups from the point of learning style pattern did not differ significantly. Final results are displayed in table 1.

Table 1: Learning styles structures in LCI, CG and K groups

Group/n		Sequential	Precise	Technical	Confluent
LCI 108	preferred	75	29	40	9
	accepted	33	75	63	82
	rejected	0	4	3	17
CG 103	preferred	76	23	39	14
	accepted	26	76	59	64
	rejected	3	6	7	27
K 113	preferred	80	26	41	9
	accepted	31	80	64	74
	rejected	2	7	8	30
Total 324					

The pedagogical experiment having been closed (phase 3), students expressed their opinions, experience and attitudes in the final questionnaire, both from the technological and didactic point of view. The questionnaire included 22 items, while detailed information about the sample group was provided in five items and 17 questions dealt with respondents’ experience in studying the course – seven statements were evaluated on the four-level Likert scale, four items used the four-level classification (1-best, 4-worst) and six ones were the open-answer questions.

3. Research results

Data collected in the first part of the questionnaire described the main characteristics of the research sample. The sample group consisted from 60 – 63 % of men in all three courses. Respondents were from 20 – 50 years old, approximately 80 % in the 20 – 24 year-old group. They mainly graduated from secondary professional schools (62 – 67 %), followed by grammar school graduates (29 – 45 %). Most of respondents (60 – 65 %) did not have any previous experience in studying online courses, approximately 20 % of them had studied one course and 5 % were experienced online learners having passed four or more courses.

The second part of the questionnaire provided data on students’ satisfaction with the process of instruction in online courses. More than 80 % of respondents considered the learning instructions clear and approximately 80 % of respondents were rather or fully satisfied with the way how study materials were organized or re-organized on their personal home page of the course (figure 1).

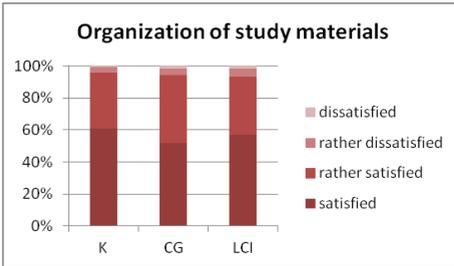


Figure 1: Organization of study materials (dark colour – highly satisfied, light colour – dissatisfied)

Other data show that most respondents (64 – 68 %) did not have problems to master the learning content from the reason of short period for studying but one third of them (32 – 35 %) would appreciate slightly more time. On the other hand, 41 – 52 % found the three-week period for studying the course in their schedule without any problems, followed by another group of 37 – 46 % of respondents who might have had some slight problems and expressed partial satisfaction in this point.

Other two items dealt with evaluation of various types of study materials from the point of respondent’s learning style. Figure 2 displays respondents’ preferences in descending order, i.e. from those which they consider to suit best their learning style (1) to those least suitable (4) when each value can be used once only.

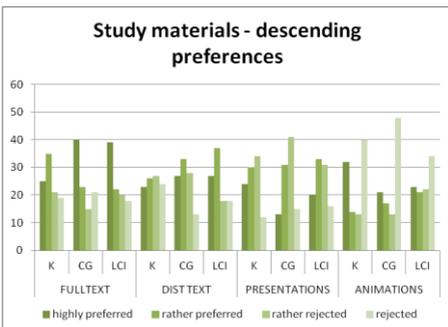


Figure 2: Study materials in descending preferences (dark colour – highly preferred, light colour – rejected)

The collected data show

- very positive appreciation of fulltexts in all three groups followed by partially positive evaluation;
- comparable rate of full and partial appreciation of texts structured for distance learning;
- rather high rate rejecting presentations;
- strong appreciation of full texts in the control group where instruction follows teacher’s style.

On the other hand, figure 3 displays data which describe learner’s satisfaction with each form of study materials marked from 1 (highest satisfaction) to 4 (lowest satisfaction) while each value can be used for more than one type of materials.

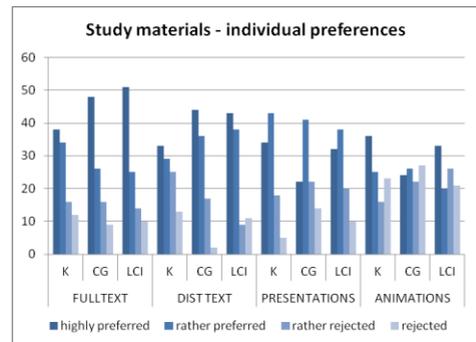


Figure 3: Study materials according individual preferences (dark colour – highly preferred, light colour – rejected)

This figure confirmed results discovered in the previous item (dealing with descending preferences) showing strong preference in fulltext study materials; rather equal values of fully and partially preferred texts for distance learning; rather strong rejection of presentations, partially in the LCI group (experimental1); very strong preference of full texts, mainly in the group reflecting teacher’s style of instruction. This item played the role of cross-evaluation in the questionnaire to verify or falsify the results received in the previous question. This objective was

reached as the results were confirmed reaching similar values in both figures (compare figure 2, figure 3).

Furthermore, several items collecting students' feedback on the difficulty of mastering the learning content showed that chapters Creating quotations and Professional writing were considered the most difficult topics.

Finally, the course of study was also evaluated from the point of learners' problems, difficulties and limits, i.e. following five criteria were monitored: to start studying, to keep studying, lack of time, tiredness and problems with technology. Data were evaluated on the six-level scale from no problems (level 1) to crucial problems (level 6). Results are presented in figure 4.

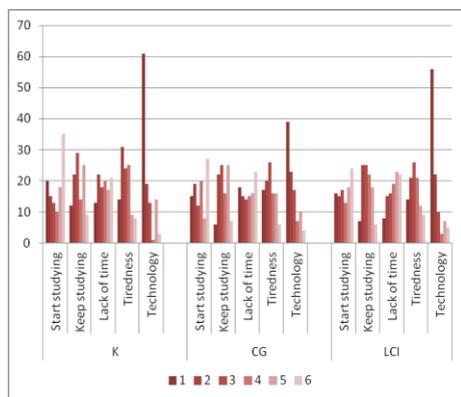


Figure 4 Learner's problems within studying (dark colour – no problems, light colour – heavy problems)

4. Results interpretations and discussions

From the above presented results can be clearly seen that respondents – participants in the online course expressed their positive approach and satisfaction with the course of study. Hardly any crucial problems appeared which could be also caused by the fact, that the respondents were students of the Faculty of Informatics and Management and neither the

online learning, nor the entire learning environment built limits and restrictions to them in the process of learning and approximately 80 % would take another course (other courses) within their university study, i.e. they would prefer online learning to traditional face-to-face approach.

There might be several reasons how to interpret the results.

First, based on the reached results we agree with e.g. Honey [5], Mitchell [6], Sternberg [7] saying that slight mismatches in learning and teaching styles result in developing new learning strategies, which is contributive to the learner. Thus the research question is as follows: Is it really worth dealing with learning styles if the pedagogical experiment did not prove any increase in knowledge?

Second, as mentioned in the theoretical part, there exist some researches (and researchers) that reject the theory of learning styles and tailoring the process of instruction to individual preferences, e.g. Honey and Mumford [8], Honey [9]. The proposal might be to work with learners (a) showing very strong preferences in one learning style, and help them develop other strategies and approaches; (b) attract attention and show those of very weak preferences and are able to study efficiently using any strategy that there exist some approaches and methods which might suit them better, which finally can increase their motivation in learning, make the process more interesting for them, which is not of little importance [10].

Third, there could be several other reasons why the expectations and hypotheses were not verified, both on the researchers' and learners' side. In further research activities other approaches running the process of instruction reflecting individual learning styles can be tested, i.e. tutor's role as a facilitator could be strengthened and emphasized so that learners feel and

study in a more friendly environment, being provided wider technical and didactic support, use their experience in online learning developed in this course, and many other measures could be taken. On the learners' side the skill of independent work and study must be supported and gradually developed, as online learning has become standard not only in the tertiary education but particularly in lifelong learning.

5. Conclusion

Thus it can be concluded that despite the contribution of the learning style theory to the online learning process was not proved within this project, no decrease in learners' knowledge was discovered in comparison to the traditionally led process of learning which follows teacher's style of instruction. The above mentioned authors (Gregorc, Mitchell, Honey, Mumford etc.) also described results not verifying the learning styles contribution to the knowledge development and educational objectives within the learning process reflecting individual learning styles; including Felder particularly focusing on engineering education. As mentioned in the first chapter, the time came to deal with didactic aspects of ICT implementation into the process of instruction. Students have not reached higher but the same level of knowledge in online learning, which corresponds to predefined learning objectives; and both teachers and learners have to develop their knowledge and skills towards studying efficiently being supported by modern technologies. This conclusion and recommendation is natural for engineering students and engineering pedagogy, both having close relation to modern technologies.

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6. References

- [1] R. M. Felder, "Are Learning Styles Invalid? (Hint: No!)," [Online] 2010. [Cited: 8 22, 2012.] [http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/LS_Validity\(On-Course\).pdf](http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/LS_Validity(On-Course).pdf).
- [2] K. Kostolányová, *Teorie adaptivního e-learningu*, Ostrava: OU, 2012.
- [3] I. Šimonová, P. Poulová, *Learning style reflection within tertiary e-education*, H. Králové WAMAK, 2012.
- [4] C. A. Johnston, *Unlocking the will to learn*, Thousand Oaks: Corwin Press, Inc., 1996.
- [5] P. Honey, et al., *Attitudes to e-learning: A national survey 2000 undertaken by the Campaign for learning*, Sandford: Southgate Publishers, 2000.
- [6] D. P. Mitchell et al., *Learning style: a critical analysis of the concept and its assessment*, London: Kogan Page, 2004.
- [7] R. J. Sternberg, L. F. Zhang, *Perspectives of thinking, learning and cognitive styles*, Mahwah: Lawrence Erlbaum, 2001.
- [8] P. Honey, A. Mumford, *Using your learning styles*, Maidenhead: Peter Honey Publications, 2002.
- [9] P. Honey, "Learning styles - the key to personalised e-learning.," [Online] 2010b. [Cited: 1 13, 2012.] www.bbmmatters.net/bb_matters.../Learning%20styles_peter%20honey.pdf.
- [10] R. Sternberg, "Mental Self Government. [Online] 2010. [Cited: 8 22, 2012.] <http://web.cortland.edu/andersmd/learning/Mental%20Self%20Government.htm>.