

STUDY PROGRAM “HOME ENVIRONMENT AND INFORMATICS IN EDUCATION” DEVELOPING OPPORTUNITIES

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Abstract. The aim of the research is to clear up the necessity of the information and communication technologies (ICT) integration methodology, offered by the author, in the household and home economic education. Studies with the ICT integration methodology, worked out by the author, include: 1) possibilities of unassisted and intensive household, home economic and informatics mutual integration providing and development; 2) diversifying and improving study methods; 3) extended application of ICT. Worked out ITC integration methodology was evaluated with analytic hierarchy process (AHP), by comparing defined criteria and subcriteria coupled together in relation to set aims. According to the global priority summary of experts, it is possible to conclude, that the highest total rating have alternative *studies* with the global priority vector of *ICT integration methodology* – 0.396. As well as *compliance with study content* based on criteria (0.310) and *the effectiveness of studying* (0.225) the first place takes alternative *studies with ICT integration methodology*. It means, that worked out and offered by the author ICT integration methodology is necessary in household and home economic studies.

Key words: ICT, household and home economic studies, alternative, integration methodology.

Introduction

The professional highest education bachelor study program *Home environment and informatics in education* was formed on the basis of academic study program supplementing with practical handicraft classes and field methodological practices in the end of each study year.

Analyzing this study program, the author conclude, that the courses relevant to household and home economic as well as informatics are included in sufficient amount.

Evaluating the amount of credits (Mājas vide un informātika izglītībā studiju plāns, online) in dedicated study courses included in study program *Home environment and informatics in education* author concluded, that 55.6 % from all study courses are professional dedicated courses, that means it is necessary to use dedicated household computer programs.

During working out dissertation, the author improve the content of professional study program *Home environment and informatics in education*, by offering the worked out ICT integration methodology.

Studies with ICT integration methodology worked out by author –directions to improve the quality of studies are:

- unassisted and intensive household, home economic and informatics mutual integration providing and development in studies;
- diversifying and improving of study methods;

- extended application of ICT (the carrying out necessary calculations for choice product to make, visualization and shaping of household product using the special household and home economic computer programs, current and final achievement control organizing in the household sphere etc.).

Today it is necessary to work with such up to date technologies as videoconference, interactive blackboard, digital document camera and the like, because the lecturer by using possibilities of these new interactive ICT will be able to attract attention of the audience and communicate in the highest level of communication, thanks to interactive audiovisual possibilities of ICT.

The author considers, that it is possible to improve the effectiveness of the lesson in study course Household and home economic by using *interactive blackboard*, for example, in the planning of family finances or for conforming the clothing to corresponding style, or for shaping the design composition of room, that is possible to make in groups and to make comparison, or for composing of menu virtually in groups, when, for example, one group thinks out the menu, the second group virtually lays the table. After the completing of task, each student individually evaluates the corresponding of laying to offered menu, by using interactive response system.

With the *digital document camera*, for example, using zoom it is possible clearly demonstrate how to tune the size of knitting needle to appropriate diameter of wool, or to show, how it is possible to embroider, for example, drawn-thread work or cross-stitch, as well as by dividing the screen in two parts, it is possible to make draft, leaving the draft in one side of screen and in the second side showing, how the actual final shape of draft develops. By help of the *digital document camera* or video camera, during household and home economic lessons it is possible to make video records how the product is coming formatted in specific theme, for example, in the batik lesson, dividing in three groups (tie, hot and silk batik).

By help of different computer programs it is possible to show the content of Household and home economics in dynamic format, by mutual combining of text, graphic, diagrams(*MS PowerPoint*), video and sound effects (*Movie Maker*), making interactive control tasks of achievements(*Hot Potatoes*), drawing drafts and making compositions (*Adobe Photoshop*, *Corel Draw*, *Gimp*) as well as using different special household and home economic computer programs(*Stitch Art Easy*, *Calling Knitting*, *MyCrochet*, *WeavePoint*, *Pattern CAD*), that is provided for facilitation and acceleration of household product preparing works technological process.

ICT integration methodology worked out by author was evaluated and compared with two another development possibilities of study programs: 1) *studies with current methodology*, 2) *e-studies*.

Studies with current methodology – radical changes in the professional highest education bachelor study program during studies of nascent Household and home economic teachers are not foreseeable.

In acquirement of study courses the problem-oriented approach and approach learning by doing are used; to nascent teachers improve their professional, social and methodological competence during studies, and after that creative to use it in their pedagogical practice. Students have possibility to use study aids and study materials in e-format prepared by lecturers as well as to submit self-contained works to lecturers in e-mail format and get consultations, if it is necessary.

For evaluation of study achievements different evaluating forms and methods are used according to aims, set in study course (seminars, tutorials, essay, self-contained works, tests, reflections). Lecturers using multimedia overheads during study process.

The study work is purposefully promoted to stimulate, promote and support the activity of student, self-dependence and cognition interest. Lecturer year by year ever realizable takes the role of consultant, organizer of discussion, organizer of studies.

E-studies – this environment exists on server and the users can reach system via internet browser. The lecturer by locating teaching materials in e-study environment, allows for students in due time introduce with them, in that way more time remains for discussions and talking about another similar problems. Therefore it is possibility to acquire the study theme deeper (LLU e-studiju sistēmas apraksts, online).

E-study environment offers different tools to make the acquirement of study course more affectively. In e-study environment the lecturers have possibility to upload and publish the study materials that is necessary to study work or simply to store them, students can download different study materials as well as submit their self-contained works, it is possible to apply time limit, the deadline for submitting of these works. Lecturer can evaluate the work by looking it in e-study environment, create online tests or questionnaires for students that are possible to evaluate by mark. Student can see results in mark book in e- study environment. It is possible to communicate with lecturer, to clear up the thing that he don't understand or to discuss learnable theme, in that way the feedback is developing between student and lecturer. Lecturer in his turn can make analysis after some testing and see in what questions students have been more mistaken as well as average mark

or success level of the students of the given year. The location of study materials in e-study environment saves finances that are required for multiplying a distribution of study materials.

The comparison and evaluation of alternatives was carried out based on following cognitions of researchers and by working out necessary criterions and subcriterions for AHP (Saaty, 1980):

- Study process must be oriented to students and lecturers self-updating, it must stimulate and promote internal growth (Maslow, 1954).
- The realization of self-education principle is especially important nowadays, because due to science and technique fast developing, knowledge acquired in education establishments quickly becomes out-of-date, and therefore it is necessary for non-stop updating and making them richer. To realize life demand, during study process lecturer must persistently stimulate students to self-contained work to acquire knowledge, to teach using of catalogues, internet searchers, home pages and other reference objects (Albrehta, 2001).
- The student is in the centre of education process, he is prepared to any task acquiring and memorizing that is interesting for him. Concentrating to student and his ability, lecturer approach to study process from the viewpoint of humanistic approach and organizes educational process, by using approach oriented to student (Bazens, 2008).
- Each student must acquire certain knowledge and skills and must be motivated to realize sustainable development during all life – in the family, school, high school and work by developing lifetime education (Zeltiņa, Glikasa un Karule, 2009).

To perform AHP author worked out following five criterions:

- acquisition costs to realize study program with three defined subcriterions – powerful computer hardware and internet costs, costs of specialized computer programs, the costs of lecturer qualification improving;
- the time consumed for program preparation with three defined subcriterions – amount of time to work out study materials, training of lecturers and control of learning achievements;
- compliance with study content with four defined subcriterions – the international cooperation between education institutions, the stimulation of lifelong learning and deeper learning of students, development of professional, social and methodological competences;
- effectiveness of studying with three defined subcriterions – development and improving of knowledge, skills and professional competitiveness, stimulation of internal growth;

- psych-emotional convenience of study program acquiring with three defined subcriteria – the development of student personality, nonverbal and verbal communication with lecturer, ergonomic of learning environment.

The investigated problem is development possibilities of study program *Home environment and informatics in education*. The aim of research – to clear up the necessity for ICT integration methodology offered by author in household and home economic education

Research methods

The improving of study program *Home environment and informatics in education* learning methodology with ICT integration methodology worked out by author was evaluated using AHP. 10 experts took part in research (the lecturers from Latvia university of Agriculture, Faculty of engineering, Institute of Education and Home Economics as well as students - nascent teachers of Household and home economics.)

At first experts was introduced with ICT integration methodology improvement offered by author and three possible alternatives: studies with existing methodology, studies with ICT integration methodology and e-studies. After that experts, using relative relevance scale (Saaty, 1980), mutually compare defined 5 criteria and 16 subcriteria in pairs in relation to total aim, i.e. development possibilities of study program *Home environment and informatics in education*. Further in accordance to relevant expressions from AHP (Saaty, 1980), there was worked out calculations of priority vectors as well as definition of coherence index, to evaluate how the activities of expert corresponds to given method when he composed the table necessary to research.

The processing of all evaluations data of experts was carried out using MS Excel software, by calculating the average value of corresponding priority vector and showing it in graphic.

Results and discussion

Initially the data analysis was carried out for each criterion by mutual comparison, the evaluations of experts are summarized in the Figure 1.

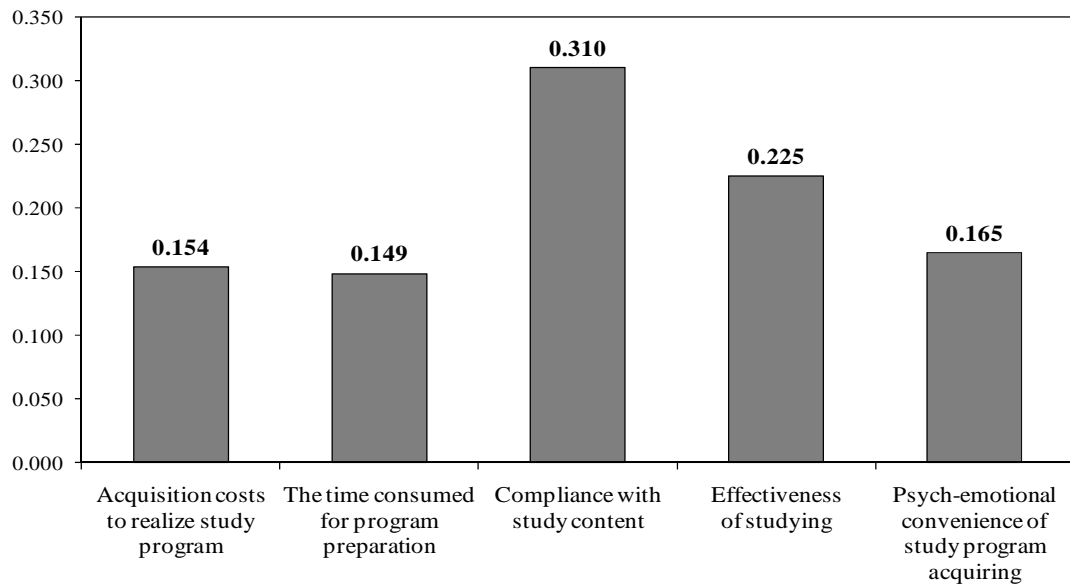


Figure 1. The evaluation of experts after mutual comparison of criterions

It is possible to conclude from the figure 1, that the highest rating have criterion *compliance with studies content* – 0.310. In the second place there is criterion *effectiveness of studying* – 0.225. In the third place there is criterion *psych-emotional convenience of study program acquiring* – 0.165. Then following *acquisition costs to realize study program* – 0.154 and *the time consumed for program preparation* – 0.149.

The following analysis of data is the expert’s evaluation about development possibilities of study program *Home environment and informatics in education*. Each offered alternative (*studies with existing methodology*, *studies with ICT integration methodology* and *e-studies*) was evaluated according all sixteen subcriteria (Fig. 2).

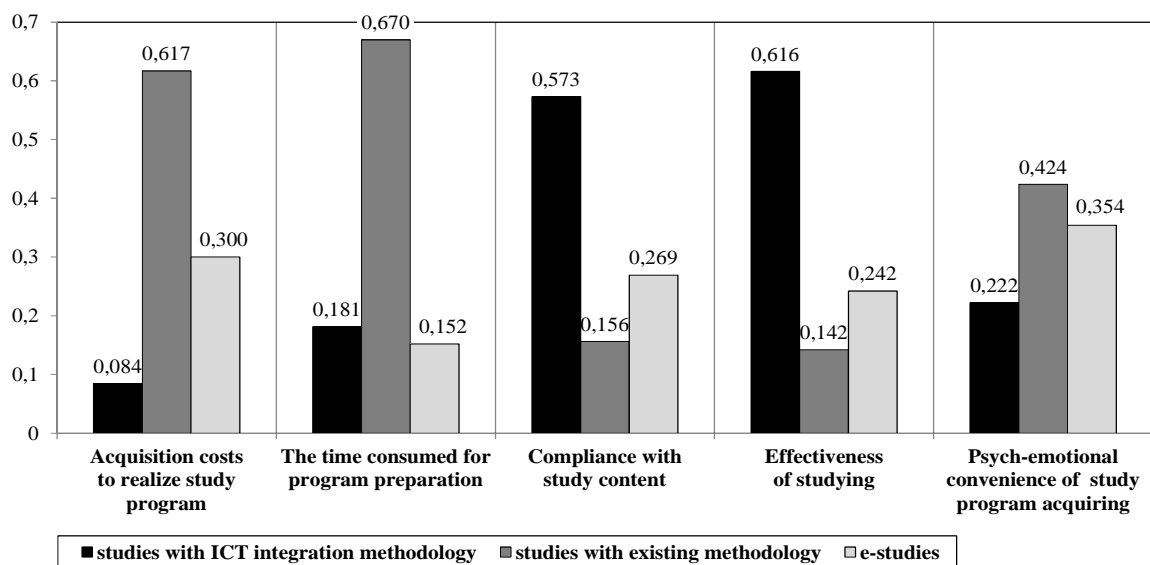


Figure 2. The evaluation of development possibilities of study program by experts

According to criterion *acquisition costs to realize the study program* the highest evaluation received alternative *studies with existing methodology* with the value of global priority vector - 0.617. In the second place there are alternative *e-studies* - 0.300, after that follows *studies with ICT integration methodology* -0.084. It is possible to explain such distribution by the fact, that for studies with existing methodology all necessary aids are delivered and acquisition costs for program realizing are not essentially. Also for e-studies it is not necessary to consume lot of resources; therefore this alternative is evaluated as the second. In return for studies with ICT integration methodology there is necessary to consume a lot of finances - both for purchasing of special household computer programs, and improving of lecturer qualification.

According to criterion *the time consumed for program preparation* the highest evaluation again received alternative *studies with existing methodology* with the value of global priority vector - 0.670. In the second place there is an alternative *studies with ICT integration methodology* - 0.181, after that follows alternative *e-studies* - 0.152. It is possible to explain such distribution by fact, that for studies with existing methodology learning and achievement controls materials are already worked out end in the case of necessity, there get improved. For studies with ICT integration methodology and e-studies there is necessary time for both learning and achievement control materials preparation, and lecturers training. In e-studies environment learning and achievement control materials will take more time than in studies with ICT integration methodology. In return more time will be consumed to prepare lecturers in special household and home economic computer programs that are provided in ICT integration methodology.

According to criterion *compliance with studies content* the highest rate this time takes alternative *studies with ICT integration methodology* with the value of global priority vector - 0.573. In the second place there are e-studies - 0.269 and then follows *studies with existing methodology* - 0.156. Such distribution is because stimulation of students' lifelong learning and deeper learning is going on with the ICT, because using of ICT comes more necessary and real more and more.

According to criterion *effectiveness of studying* the highest evaluation again takes alternative *studies with ICT integration methodology* with the value of global priority vector - 0.616. In the second place there are e-studies - 0.242 and in the third place there are *studies with existing methodology* - 0.142. Such distribution is because the development and improvement of knowledge, skills as well as development of professional competitiveness currently have been popularized by the possibilities offered by ICT.

According to criterion *psych-emotional convenience of study program* acquiring the highest evaluation received alternative *studies with existing methodology* with the value of global priority vector - 0.424. After that follows alternative *e-studies* – 0.354 and then *studies with ICT integration methodology* – 0.222.

As the last one, the summary value of global priority vector was calculated, where the average values of corresponding priority vectors are showed (Fig.3.).

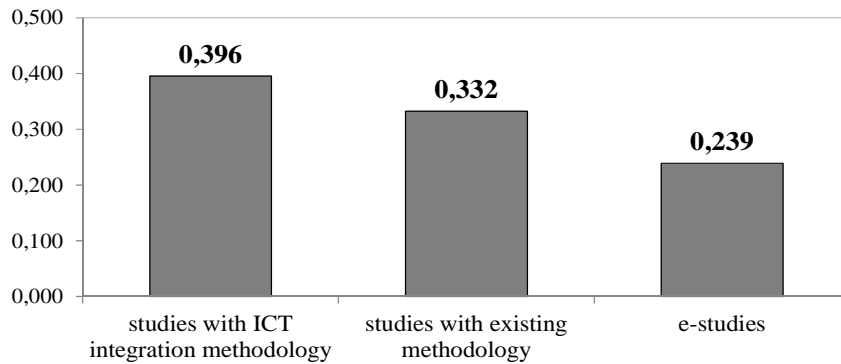


Figure 3. The summary of experts' global priorities about development possibilities of study program *Home environment and informatics in education*

The highest total rate after all sixteen subcriteria have alternative *studies with ICT integration methodology* with the value of global priority vector - 0.396, then follows alternative *studies with existing methodology* with the value of global priority vector - 0.322 and the third place based on experts evaluation takes alternative *e-studies* – 0.239.

For criteria *acquisition costs to realize study program* and *the time consumed for program preparation* more preferable alternative is *studies with existing methodology*, because there is not necessary to spend time for preparing as well as financial resources to formation. In return, according to criterion *compliance with studies content* and *effectiveness of studying* in the first place comes the alternative *studies with ICT integration methodology*. It is possible to see in fig.1 that by making mutual evaluation of criteria, experts give the highest rate to criteria *compliance with studies content* and *effectiveness of studying*.

Conclusions

1. According to processing of experts inquiry using AHP, the aim of that was to clear out development possibilities of study program *Home environment and informatics in education* it is possible to conclude, that the total highest rate based on sixteen criteria have alternative *studies with ICT integration methodology* with the value of global

priority vector - 0.396, then follows alternative *studies with existing methodology* with the value of global priority vector - 0.322 and the third place based on experts evaluation takes alternative *e-studies* – 0.239.

2. For criteria *acquisition costs to realize study program* and *the time consumed for program preparation* more preferable alternative is *studies with existing methodology*, because there is not necessary to spend time for preparing as well as financial resources to formation. In return, according to criterion *compliance with studies content* and *effectiveness of studying* in the first place comes the alternative *studies with ICT integration methodology*. Exactly these criteria have the highest rating from experts, the *compliance with studies content* - 0.310 and *effectiveness of studying* – 0.225.
3. It means that the worked out and offered by author ICT integration methodology is necessary in Household and Home economic studies.

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