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Methodology of Creating "Knowledge Pills" in the Context of Educational Needs of Students

Abstract: Changes in the forms of education, which can currently be observed, are connected to multimedia. One of the new teaching methods based on IT and worth mentioning, are Knowledge Pills (KP) – short multimedia tips, enabling students to strengthen their professional competences. KPs are also a form of effective e-learning. Appropriate methodology used in the process of KP creation allows for the increase of interest and motivation in participants of courses. It also gives better alignment of educational materials, which can lead to improving the effectiveness of teaching. The article presents methodologies for KP preparation used in selected organizations. Based on a survey conducted among the students of several courses at the Economy and Sociology Faculty of the University of Lodz, we highlight areas of particular importance for effective preparation of educational materials in the form of Knowledge Pills, corresponding to the students' expectations.

Keywords: education, e-learning, distance learning, motivation, Knowledge Pills, methodology, preparing educational materials

JEL: I23, I21, I20, A20, A21, A22, A23

1. Introduction

Today's education faces a lot of challenges due to the common use of information technologies (IT). The teacher's role has changed a lot, moving more towards the role of a coach rather than a knowledge provider. Many educational materials are available online and their form can more or less engage the students. Modern economy based on knowledge and information technologies requires development of new skills across all occupations. This applies to the students in particular as they need a lot of modern skills in order to get a good job on the dynamic labor market. Supporting collaboration and social interactions by communication and group work techniques seems to be the major trend in education (Al-Abri et al., 2016). While planning the didactic process, it is advisable to take modern teaching methods into account. Still more universities and business schools introduce blended learning employing distance learning methods. Also, project-based learning (PBL) is an even more common practice in universities. These methods strengthen the self-reliance and independence of students. Digital instruction materials such as knowledge pills, are one of the didactic means of innovative and interactive learning process, enhancing modern methods of education, known as *smart learning* (Ashfaque et al., 2014), which fits into the "smart" trend. Even though new technology seems to be effective, there are some obstructions to it, such as users' unwillingness to accept and use available modern systems and solutions, which has been emphasized in the literature for years (Davis, 1989; Park, 2009). A model related to technology acceptance and use – TAM (Technology Acceptance Model), originally proposed by Davis, gives the theoretical background which helps to explain and predict the users' behavior referring to the information technology. Applying this model to KP use intention (Garcia-de-Frutos, Antolin-Lopez, 2016), it should be noticed that the core dimensions of TAM: perceived usefulness and perceived ease of use, are the only direct predictors of the attitude towards the use. Thus, to make the KP an effective and desired educational tool, the educators and KP creators need some information about the target group's (students') preferences.

This paper describes an expanded framework helping educators to prepare Knowledge Pills as teaching material. The novelty of this contribution is that the proposed methodology involves continuous feedback from the learners. Firstly, the idea of Knowledge Pills is presented, with its characteristics and applications. Secondly, multimedia didactic materials and their place in the education process is shown. In the third part of the article, the results of a survey conducted among the students are described. In the methodology section eight steps of creating KP for academic purposes are featured. Finally, the conclusions are presented.

2. Knowledge Pills and their use in formal blended learning

Providing rapid and brief information has become a common practice in informal education. Small and accessible formats of information enable learners to get knowledge on the level of "I know how it works", "I know what to do", "I know how to think" (compare Dżega, 2013). Culinary programs as well as TV series such as: "How is it made?" with short episodes showing the manufacturing process of common, everyday items, have become very popular. In formal learning, many kinds of organizations can take advantages of Knowledge Pills (KP) – short multimedia tips. Teaching with the use of KP aims to strengthen professional competence of the learners. The main element of a KP is a short instructional video, presented in an attractive form, showing how to perform various actions within particular jobs and everyday tasks. The Key Elements of Knowledge Pills are (Carrera, 2012): the use of multimedia format, simplicity (KP are easy to create and to distribute), short duration (an average KP should take not more than 3 minutes to watch), involvement of a person with the tacit knowledge (in organizations like an enterprise) and inclusion of the management support. KPs can be used in very different situations occurring within the organization, for example:

1) employee returns from an external training;
2) employee explains something to another employee;
3) new employees are recruited;
4) new procedures are introduced.

Converting the above examples into academic reality is quite obvious, simply: the student becomes the actor of the learning process. The author's motivation to start using KPs was a situation, which repeated itself every semester, when many students who missed one or more classes, were then not able to follow further instructions. Usually the teacher can explain something again briefly during a class, but there's not enough time to repeat the explanations over and over again, for one or two students, while the rest of them are waiting. Very seldom, during the semester, the students come to consultation hours to ask about the things they don't understand. Therefore, preparation and distribution of the Knowledge Pills, which explain particular elements of a given topic, is a good solution for both the teachers and the students. Once prepared, KPs can be used many times, only sometimes a slight supplementation is necessary. For some students KPs can be a good solution for filling the competence gap, while for the others, they can be helpful in learning by repetition. The quantitative subjects (eg. mathematics, statistics) are a special group of subjects. Informatics is also a field of knowledge that needs slightly different teaching tools and methods. Teaching these subjects requires a special approach due to lots of complex and sophisticated concepts and issues

within them (Fijałkowska, Grancow, 2011: 195). Many of the concepts need to be repeated many times in order to be well understood. Some selected tools supporting the online part of the quantitative courses were presented in (Kończak, 2011). Another possibility of providing educational materials in small portions, are Knowledge Pills. They can be delivered systematically or at certain particular moments within the didactic process. They can be prepared in a series or separately, when the teacher finds it reasonable or necessary.

Preparing a KP can take a lot of time. Recording audio and/or video stream often requires some tests and then a special treatment of the material. The purpose of a KP is to simulate the interaction between the educator and the learner, thus video KPs seem to be the most effective (Carrera, 2012). In the proposed methodology the author assumed that the KPs are supplementing the classes, not replacing them. In the university practice, the lack of teacher's voice or video recording in the KP does not seems to be that important due to regular in-class contact with the students. Traditional teaching environment remains the basis of the didactic process.

Within the university realities one should also take into account the time limitations. The academic teachers willing to prepare a KP according to the students' needs, often have to work under time pressure, managing various kinds of deadlines. As (Lubina, 2010) says, the young academic staff is the group who would be interested in experimenting and probably would be ready to invest their time in new didactic methods, without financial bonus, guided by the cognitive curiosity. But who exactly is referred to by the phrase: "young" academic staff? In the author's opinion KPs are achievable for educators in general, especially when considering online and free IT tools enabling the educators to prepare multimedia materials. Teachers can use them in order to enrich their own didactic workshop. An example of such online solution will be described in a further part of this article.

Preparing extra didactic materials is generally reasonable and in the long term gives a lot of benefits (especially, it allows to save time), but at first one should invest some time in order to prepare attractive and modern teaching aids. To strike a balance, a simple methodology of preparing KPs has been proposed. It is based on a video, created with the use of IT tools only, without the necessity to record the teacher's performance. The tools that have been used in this project are: Powtoon and Libre Office (LO). Powtoon can be used for free, with some limitations, while LO is a free and open source office suite. This means that the KP creator will not bear any additional costs.

In general KPs can also support education in Lifelong Learning (LLL). Long materials are not always desirable, many learners prefer videos to be short and describing only a small problem or particular issue, while remaining a part of a broader topic. While the concept of LLL concerns adults, it is particularly important for older learners, whose professional skills are out of date and some adaptation

process is essential and necessary (Grotowska-Leder, 2014: 122). As psychologists point out, mid and late adulthood (40+) is the period of full development of learning competencies (Grotowska-Leder, 2014: 122). In this article, the author focuses on students who are within a different age range, although it is worth emphasizing, that KPs can find a wide range of applications. The main advantages of using Knowledge Pills in organizations are (Carrera, 2012):

1) supporting know-how;
2) involvement of employees – they can become representative trainees within the organization;
3) the possibility of adjustment of the training to the needs of certain jobs;
4) consolidation of existing knowledge within the organization;
5) avoiding constant repetition of informal training processes (saving time);
6) reducing the cost of traditional training;
7) facilitating training of employees, customers and partners;
8) the ability to provide training when needed, and as often as needed ("just-in--time");
9) easier learning by observation, rather than reading;
10) particularly effective in organizations with employees' rotation;
11) training not requiring advanced preparation;
12) shortest time of creating training content.

Considering academic use of KPs, it should be emphasized that in formal education, KPs are especially useful in some cases, like (Dżega, 2013):

1) leveling the knowledge before starting the series of lectures or other classes;
2) repetition of certain parts of the material;
3) explanation of theoretical knowledge on the basis of examples;
4) supporting the acquisition of skills and attitudes.

KPs are also commonly used in personal development, supporting communication and building or strengthening one's position in the labor market.

3. Multimedia didactic materials in the education process

In the past few years most of the universities and business schools uploaded some of their materials to the Internet. Even though in Poland we do not have a pure model of e-learning, most of the educational organizations use the blended form, to a greater or lesser extent employing distance learning solutions. This means the use of e-learning platforms, as well as sharing didactic materials online or even web-based tests systems (Kończak, 2009: 64). To place KPs properly within the education process, it should be analyzed overall. The analysis of educational process

should consider four important aspects: the actors of the process, their objectives, the didactic or instructional materials, and the administrative and support infrastructure (Koper, 2000). There are two categories of the actors: A_L – learners (eg. university students) and A_E – educators (eg. academic teachers). Their objectives (O_L and O_E) complement each other. The learners tend to gain some knowledge, competences or skills. They follow the guidelines defined for lessons or courses onto which they are enrolled. The educators' role is to compose didactic materials, manage their contents, and establish pedagogical mechanisms to guide learners through the learning process. The administrative and support infrastructure for the educational process includes services connected with managing the learning process. From the learners' point of view this covers: course offers, admissions, enrollment, lesson schedules, tests and examinations, etc. On the educators' side it is: organization of courses, their structure, schedule and timing, according to selected curriculum or educational program. The elements of the education process are shown in Fig. 1.

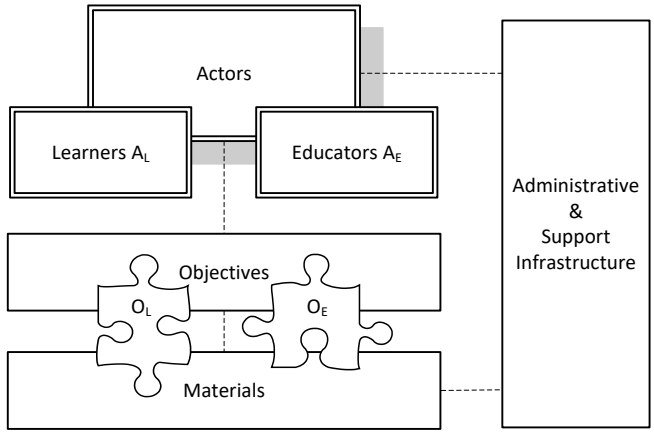

Fig. 1. Elements of the Education Process
Source: own elaboration on the basis of Koper, 2000

The development of e-education and blended learning forms at universities requires creating of databases of teaching materials in electronic form. In the pedagogical literature, the following concepts are distinguished: electronic book (e-book), multimedia manual and hyperbook (Walat, 2004). Knowledge Pills are a special form of the multimedia didactic materials, apart from the mentioned concepts. They enrich the education process and make it more attractive for the learners.

Preparing KPs is quite similar to an e-learning course content creation. It involves three fields: Subject matter content, Methodology and Technology. In a perfect world each e-learning course (as well as each KP) would be created by a team

consisting of three specialists within these fields. Their tasks would be as follows: The *Expert on the subject* would review and verify the content validity and guarantee the accuracy of the material. The *Methodologist* would be responsible for creating the courses' (or a KP series) scenarios and adapting the content into an e-learning form. The *Content creator* would build the course elements (such as: screens, HTML codes, exercises, animations) on the basis of the content and scenarios, as well as connect prepared elements into themes, lessons, modules etc. A diagram describing such a team with particular tasks is shown in Fig. 2.

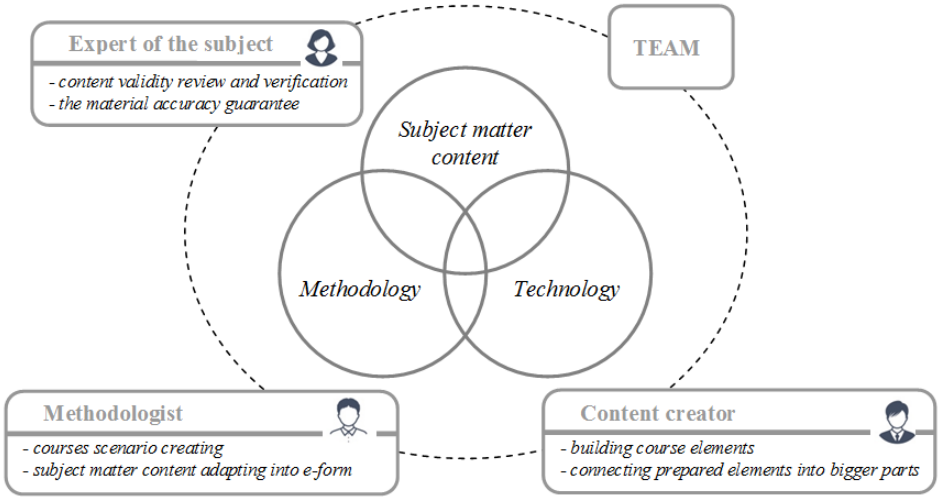

Fig. 2. Sample team working on didactic materials for an e-learning course

Source: own elaboration on the basis of Hyla, 2003; 2016

However, an academic educator often needs to prepare didactic material such as a KP very quickly and has no support of any other specialists. Because the process of preparing KPs must include all the fields mentioned above, the educator is forced to become proficient in all of them. Fortunately, the content is usually prepared in a traditional form and the educator is the Expert on the subject – this assumption is required, otherwise the educator couldn't teach. When it comes to Technology – more and more educators use Learning Content Management Systems (LMS, LCMS) and put their didactic materials on an educational platform (like Moodle). Also, many tools enable people, who are not very familiar with IT, to create good, engaging KPs. An example of a cloud application enabling educators to prepare short videos is Powtoon. The video used in the described survey was created with the use of this cloud-based software (SaaS). It is very useful when creating animated presentations and animated explainer videos. Powtoon is very intuitive and easy to use, many of its functions are available free of charge. The application allows us to generate an XML file that can be played in the Powtoon online view-

er. The project can also be published on YouTube. Thanks to this, playing the video is easy and the universal format makes it readable on every device such as tablets, smartphones etc. The video file can also be downloaded as an MP4 file.

The third field of e-content creating is methodology. In this article the author suggests a methodology of KPs preparation, based on the literature review and own survey.

4. The survey on Knowledge Pills project

The KP which was the subject of the survey had been created with the use of Powtoon and LibreOffice Calc. The scope of the material covered an introduction to relative and absolute cell reference in a spreadsheet (Calc). This topic was selected due to the fact that all of the students at the Economy and Sociology Faculty have IT classes on the first year of their studies and these issues are familiar to all of them. Some of the video's elements were exaggerated in order to spotlight or confirm some general rules of web usability. The soundtrack was very dynamic and expressive, a few animated elements (like a hand or a figure of a girl) were introduced, the font color on a few slides was very bright. In the author's opinion these elements were a little bit distracting, but on the other hand their role was to attract the audience. The speed of the material was quite high, the video lasted less than 2 minutes.

The evaluation of the didactic materials needs both qualitative and quantitative instruments. In order to determine how students assessed the quality of the materials, a semi-structured WAI (*Web Aided Interview*) was used. To gather information about how many students, who watched the material, assessed it as good or not useful, a questionnaire and a database were employed. The questionnaire contained both open and closed questions to gain both qualitative and quantitative data, gaining both reliable and valid results. The target audience was a group of students from the Faculty of Economics and Sociology, the author was not targeting particular gender. The survey's results, compared with the students' list showed quite an even distribution of gender. In this section of the article a part of the survey results are presented.

Most of the respondents were students of: Economy (23.5%), Finance and Accounting (22.1%), Logistics (19.1%), Economic Analytics (10.3%) and Informatics (7.4%), but there were some replies from other fields of study too. Over 90% of the respondents were on the first year of their full time studies.

The survey delivered a lot of valuable information. It showed that most of the students (72%) had never heard of KPs before, but most of them marked this form of learning as very good or good as a didactic material. In Fig. 3 the grades for certain features (usefulness, attractiveness, motivation, effectiveness) of the sample KP are shown.

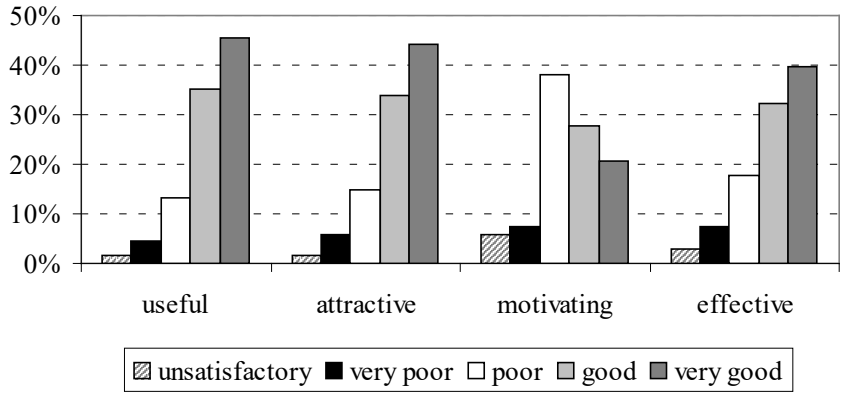

Fig. 3. Grades of certain features of the KP sample

Source: own elaboration

The above results indicate that this form of didactic material is mostly considered useful, attractive and effective, but poor in motivating. The reason for this can be that the students didn't need to make an effort to find the solution, they just got it "ready to swallow" – as in the case of a real pill. There appears a question if this direction – delivering complete portions of knowledge – is a good one in the process of studying, though this is not the issue to be discussed in this article.

Internet is the everyday source of educational materials for about 64% of surveyed students and quite a common source for 34%. Over 72% of them claim that teachers do not often recommend materials available online. This shows the students' expectation of receiving such materials. On the other hand, asked about using the provided materials before the classes, only 13% of the students confirmed thoroughly studying them, while half of them only happen to do it sometimes, 40% check the materials only if the teacher clearly requires them to do it.

The scope of the material covered by the sample KP was assessed as appropriate, many of the respondents confirm that they would like to get access to this kind of materials during their study. They also suggested creating a series of KPs covering most of the more difficult topics, discussed during the semester. More than half of the surveyed students (54%) considered the speed of the sample KP appropriate, while about 44% assessed it as too fast. Only for 1.5% of the surveyed group it was too slow (see Fig. 4).

The guideline arising from the above opinions is that the material should be rather calm and sober, and in a series of such KPs there should be standardized font and color patterns; music could be replaced by the educator's voice explaining the issue (which can be more time consuming at the beginning). The time of the video should be longer (from less than 2 minutes to about 3 min.). This result confirms other research outcomes;

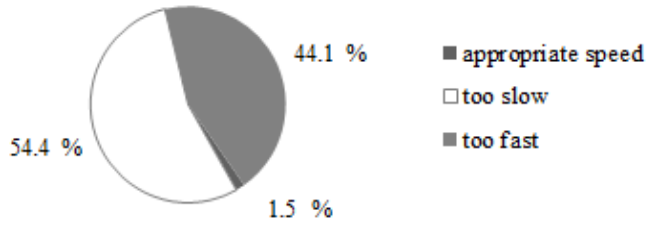

Fig. 4. Opinion on the speed of the sample KP

Source: own elaboration

The surveyed students indicated a strong need to engage with many kinds of online activity connected with their studies. If they had such possibility, they would preferably like to get involved in an Internet group associated with studies (72%) and Web Student Organizations (33%). The responses are presented below (Fig. 5).

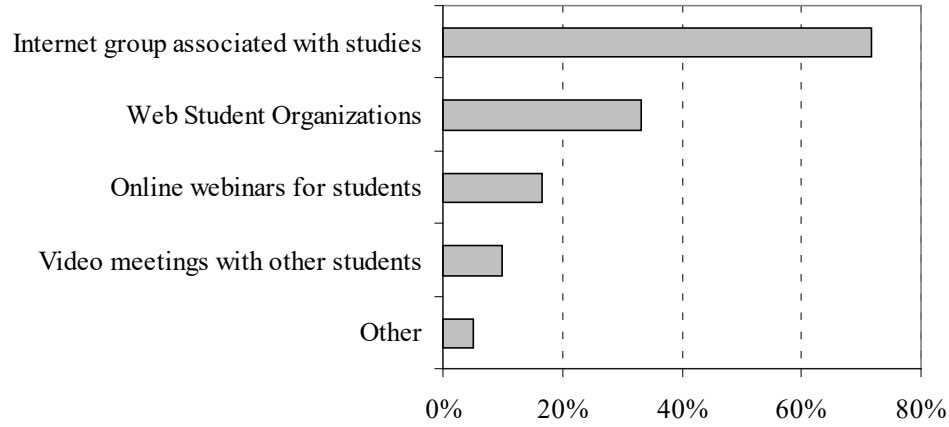

Fig. 5. Interest in online activity connected with the studies

Source: own elaboration

This may indicate a strong need for sharing didactic materials and for mutual help during the course of studying.

As the audience are young people, nowadays consumed by media and music, it seems justified to use these means in the education field. The sample short KP video is presented with quite dynamic music in the background. One of the open questions concerned this background. What's interesting, most of the students preferred calm music, although some of them agreed that the music used in the video was good enough. It seems reasonable to take into consideration the target group's preferred music style, so that the video as a whole appeals to them and encourages their attention. This would require the inclusion of some questions about preferred music as well as preferred graphic style. However, the broadening

of the research field should be limited in order to focus on the essential content, not the form itself.

Surprisingly the students expressed many interesting comments and opinions in the form of "longer text", which indicates their openness to the dialog concerning educational needs and expectations. Analyzing these seems reasonable and valuable, however it requires another study.

5. Methodology of Knowledge Pills creation

On the basis of the available literature and own survey, the author proposes a methodology aiming at helping the academic educators in KP preparing process.

As many authors point out (eg. Carrera, 2014; Jamroży, 2014), there are four stages which can be distinguished in the methodology of creating multimedia didactic materials in electronic form. These are:

1) Analysis/Diagnosis;
2) Design/Creation of content;
3) Digitization/Dissemination;
4) Testing/Assessment.

Knowledge Pills are a particular type of multimedia didactic materials, thus adjustment of the methodology is reasonable and justified. To determine the purpose of a project like a KP, following questions should be answered (compare Helenowska-Peschke, 2009: 106):

1) What is the purpose of the KP (what are the usability problems or imperfections of existing teaching materials)?
2) What do we want to achieve through our KP project (why are new technologies potentially useful)?
3) What else is needed to achieve the goal (requirements of the use of multimedia content in a specific process of education)?

Additionally (or rather most of all) we should be sure about the target group, the material will be created for. This means we need to know the actor of the process – the user, referring to A_L in the general education process scheme (shown in Fig. 1 in the first part of this article).

To answer the above questions, the KP designer and the educator should cooperate, and the learners' (A_L) approach should be surveyed. To prepare a survey, the educator cooperating with the KP designer/creator, can use some internet tools (such as: Google Forms or SurveyMonkey) which allow for gathering of brief statistical information. Internet survey is a simple tool, enabling the surveyor to reduce costs and time needed to perform the survey. To analyze the video itself, YouTube Analytics can be employed, which is described in a further section of this article. The existing teaching materials should also be analyzed to find the core content, which could

be transferred or converted into multimedia format. To share the new content form (KP) and make it truly available, the knowledge of the learners' preferred format is also required. Realizing what kind of technologies are commonly used, enables the creators to find the most useful ones. It is recommended to carry out a survey among the learners before designing a KP. Not only the technical side of the process should be taken into account, but also some organizational aspects, such as the organization's attitude (permission) to the implementation of new technologies. As some recent study shows, the lack of acceptance of online instruction by faculty is a serious barrier to the growth of online instruction (Allen, Seaman, 2013).

5.1. Implementing User Centered Design in Knowledge Pills creation

Knowledge Pills should be created based on the User Centered Design (UCD) philosophy assuming that the user must take the central place in the designing process of any computer application. UCD is commonly applied in many fields of computer design, such as websites, computer applications, and devices. As (Cowen, Lemon, Gill-Hesselgrave, 2014) describe, UCD is "a multistage agile problem-solving approach that allows end-users, stakeholders, and operational leadership to design the human interface, testing the validity of their assumptions, using a rapid prototyping process". The UCD Methodology concerning User Interface (UI) can be illustrated as a cycle shown in Fig. 6, where arrows indicate processes.

Implementing this methodology into KP creating process requires a good interaction with the students, who become the end-users of the product (KP). It would be worthless to prepare didactic materials just to put them on the Internet, not taking into account the students' educational needs.

In KP Methodology worked out for enterprises (Carrera, 2012), the general assumptions are as follows:

1) creation of small units of knowledge to be used in a just-in-time learning perspective;
2) capturing tacit knowledge in the organization, making it available to every staff member in multimedia format;
3) making all members of the organization become trainers, coaches and mentors.

In the academic case of KP preparation and use, National Qualifications Framework (NQF) should be taken into account when designing the KP content. It is advisable to prepare materials consistent with applicable curriculum. The topics covered in a subject's syllabus can determine the series of knowledge pills. Thus a complete didactic set including traditional materials and KPs would be produced. The additional value is the possibility of including a KP into an e-learning course, which is especially important nowadays when more and more universities and business schools convert some courses into online materials.

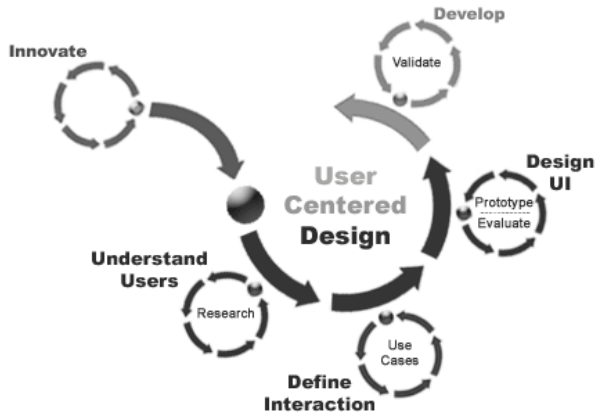

Fig. 6. User Centered Design (UCD) Methodology of User Interface

Source: SAP, 2006

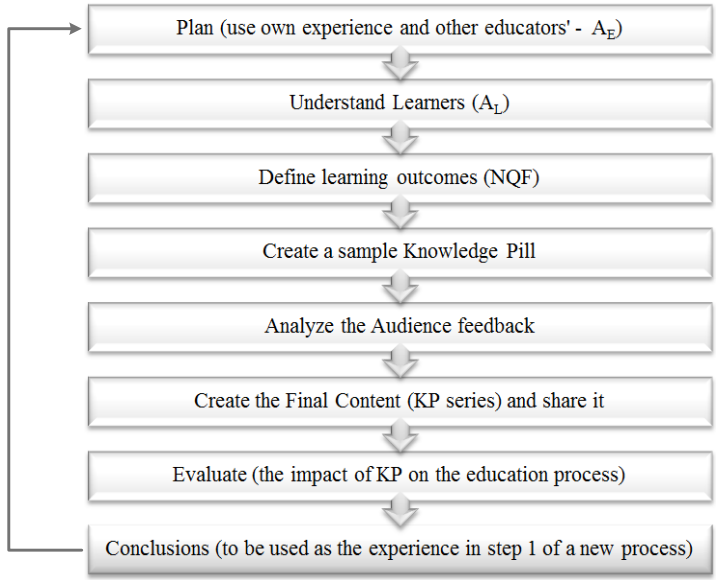

Fig. 7. Methodology of KP creation

Source: own elaboration

Detailed methodology of KP creation, covering NQF, audience feedback and the process evaluation, is shown in Fig. 7.

Understanding learners is possible thanks to the survey described in the previous section. The learners' educational needs, expectations and preferences can be recognized this way. The evaluation stage can be carried out in dual form: the learners can assess the educational process enriched with the digital content (KP) and the educators can compare the results in the acquisition of knowledge, skills

and attitudes with and without KPs. Nevertheless the aim of introducing KPs is to diversify the teaching methods. Enhancing the course's attractiveness can also be considered an important impact of KPs on the educational process. It should be also emphasized, that all the steps shouldn't be a closed process, and the conclusions (final step) from the preceding processes should be included into the planning (first step) of the new ones, thus the continuous improvement is ensured.

5.2. Audience feedback analysis

The audience feedback, which appears in this methodology, delivers lots of precious information, thus it should be analyzed accordingly. The students, who responded to the survey, were asked about their opinions concerning the presented KP. Most of the questions were in closed format, especially the one called "cafeteria", but some of them required inserting longer comments. Surprisingly, the respondents inserted many interesting answers there. They emphasized the need and willingness to use KPs more often while studying.

The survey results presented in section 3 give an overall view of the statistics concerning the audience preferences. Yet, some more information about the surveyed students' engagement would be useful. One can measure the engagement, for example, by studying the use of time spent on watching the video sample. A great Internet tool for finding the above mentioned information, as well as the number of views and much more is YouTube. Uploading the KP video to a YouTube channel and sharing it publicly, makes it possible to gather a lot of information. YouTube Analytics allows one to view stats on each individual video. One of the analyzed parameters is the average view duration (Fig. 8).

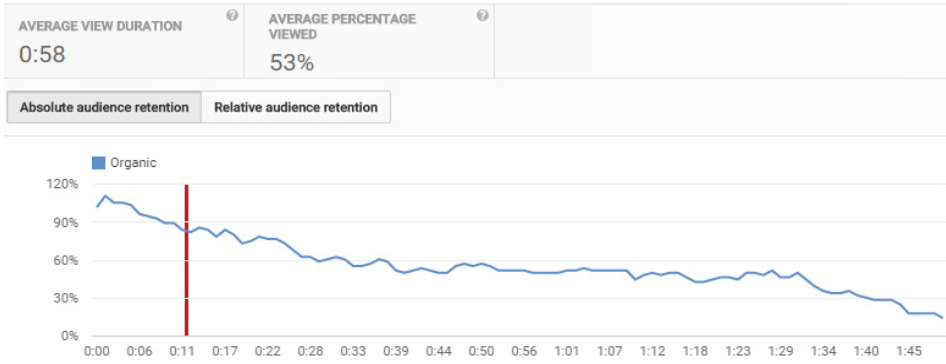

Fig. 8. Average view duration of the sample KP

Source: YouTube Analytics

One can see the *Absolute Retention* referring to the watched and skipped parts of the video. Thanks to this, the author of the video can find out which parts of the material are the most effective, and least effective. The viewing time suggests the point at which the watcher's attention dropped. Analyzing this part of the video, the KP creator (together with the educator) should try to find the way to interest the learner more. The second possibility – *Relevant Retention* – allows one to compare the video to others of a similar length. Here we may observe whether the lack of interest is the matter of our sample, or rather a general rule.

Many other options available in YouTube Analytics allow one to analyze demographics (top geographies, gender), playback locations, traffic sources, and among many more – types of devices or operating systems. In the case of our sample KP: 90% of the views came from computers, over 8% – mobile phones and less than 2% – from tablets. The main operating system was Windows (88%), about 7% of the watchers used Android, and the rest – Macintosh and iOS. This information is especially useful when designing new KPs for certain target groups, for example, using selected mobile technologies. The results can be immediately displayed in graphs. Fig. 9 shows an example of a gender and age analysis. In the context of Knowledge Pills, these pieces of information can be useful only when targeting a certain group of students. The aim of this study is to show the potential use of the presented Internet tool. In the exemplary case most of the KP viewers were women aged 35–44 and younger and men aged 18–24. This result partly comes from the structure of the group of respondents, who were students from both full and part time studies.

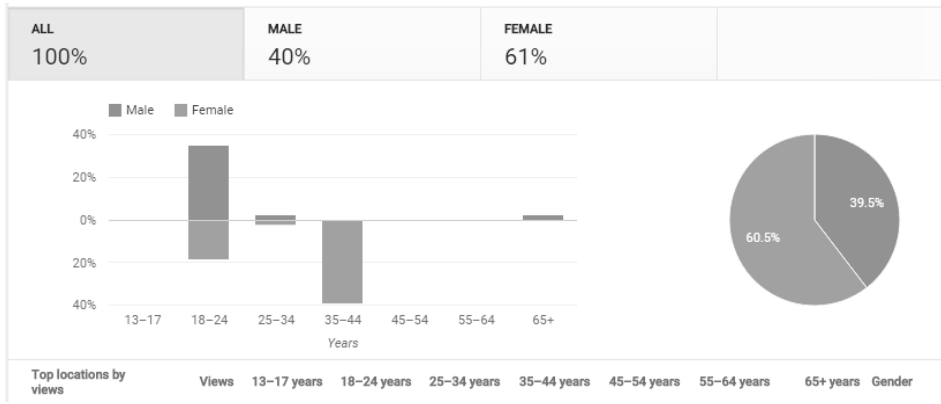

Fig. 9. Gender and age of the sample KP watchers[1]

Source: YouTube Analytics

The report displayed in YouTube Analytics can also be downloaded in csv (*Comma Separated Value*) format, easily read on a spread sheet. Analyzing the

[1] KP watchers can form a greater population than the surveyed students.

viewing patterns of people who watch our videos, can help in a better logistics of the materials as well as in adjusting them accordingly.

The process of the proposed methodology ends with evaluation and conclusions. It's reasonable to make detailed notes on each of the steps in order to use them as the canvas when improving the project. Evaluating should give the answer to the question on the impact of KPs in the education process. Have the students learnt better? Will their knowledge be more durable? Were the learners more motivated, efficient, involved? To measure the effectiveness of KPs we should use some evaluation forms, although in this study, the main idea was to encourage the students to make effort to learn with the use of new technologies.

6. Conclusion

A still growing importance of human capital is the result of changes in modern economy, where the fundamental resource of society is knowledge. Internet contains millions of didactic materials, but selecting those which are really useful in the didactic process can be very difficult and discouraging for the students. As the presented study shows, most of the surveyed students consider Knowledge Pills to be a very good and useful didactic material. They indicate the need of easily-found guidelines, which would be logically categorized, short and available. The presented survey requires further extension in order to find more guidelines on the KPs most desirable among students, although it shows quite well the general direction in which it is worth to develop the didactic workshop of academic staff.

In this article a project of methodology of creating "Knowledge Pills" has been presented. It aimed at helping teachers to manage preparation of such materials on their own. In further research the author is going to conduct clusters analysis in order to adapt the materials used in education process to different levels and different groups of the students' learning needs. The presented survey results indicate that Knowledge Pills can be very useful especially due to their form, corresponding to the media used in everyday students' life.

The author's overall conclusion about the use of Knowledge Pills in education is rather moderate as this form shouldn't be treated as a cure for everything. Like in real medicine, the use of any pills should be balanced. Studying at the university should be a process requiring some intellectual effort from the students, while the teacher should be a mentor and a coach, and not only the knowledge provider.

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Metodyka tworzenia „knowledge pills" w kontekście potrzeb edukacyjnych studentów

Streszczenie: Następujące w ciągu ostatnich lat zmiany form edukacji związane są m.in. z pojawieniem się multimediów. Wśród nowych metod nauczania, opartych na technologiach informatycznych, warto wyróżnić tzw. pigułki wiedzy – Knowledge Pills (KP), czyli krótkie porady multimedialne umożliwiające wzmocnienie kompetencji zawodowych. Stanowią one także element skutecznego nauczania na odległość. Odpowiednia metodologia zastosowana w procesie tworzenia KP pozwala na zwiększenie zainteresowania i motywacji uczestników kursów (np. studentów), lepsze dostosowanie formy materiałów edukacyjnych, co może przyczynić się do podniesienia efektywności nauczania. W artykule przedstawiono metodologie przygotowania KP stosowane w wybranych organizacjach. Na podstawie badań przeprowadzonych wśród studentów kilku kierunków na Wydziale Ekonomiczno-Socjologicznym Uniwersytetu Łódzkiego wskazano obszary szczególnie istotne pod kątem przygotowania efektywnych materiałów edukacyjnych w formie Knowledge Pills, odpowiadających oczekiwaniom studentów.

Słowa kluczowe: edukacja, e-learning, nauczanie na odległość, motywacja, Knowledge Pills, pigułki wiedzy, metodologia przygotowania materiałów edukacyjnych

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