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Intellectual Output 2 – Need Analysis

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Premise

This document contains the analysis carried out by Janusz Korczak of Pedagogical University (JKPU) in Warsaw to point out the needs related to Intellectual Output 2 (IO2). This need analysis focuses on the online learning infrastructure to propose an e-learning portal. Effective distance courses should come out of purposeful, thoughtful and learner-focused design.

The percentage of US companies using online learning hit 77% in 2017, the latest year for which figures are available. The reasons for this boil down to the growing realization of just how impactful e-learning has become. One of the main reasons US companies are so keen on e-learning is its ability to speed up employee training.

E-learning is first and foremost about learning. Without a focus on the learner, the learners' needs, and the aptitude of the learner, e-learning cannot take place. However, the enabler for all this online learning is technology. An online learner cannot learn if he or she is encountering technical difficulties.

To make e-learning successful, the technology must have several characteristics that make the learner's and the instructor's experience enjoyable. Nothing discourages a new e-learner's enthusiasm more quickly than technological glitches or kills an instructor's drive to work online like difficult-to-use software.

Steps and requirements.

Communication:

The online medium connects learners with many people around the world, therefore it makes possible to collect many ideas from this learning method. If educator/ teacher is providing lecture online, then learners can listen carefully and discuss the content with each other and the instructor. They can engage with the teacher, other students, and the learning materials through the online medium. This will help to collect many notes on a topic.

Grouping:

Online mediums and applications offer excellent opportunities to create various groups to foster connections and knowledge exchange between student and teacher and among learners. The resulting community will provide a healthy environment for learning.

Audio Visual Effects:

The online medium allows for mixing of audio and visual. Learners can convert study material into AV slides and watch the file whenever they choose. The AV method is one of the most important pedagogies of the modern era. It expands the brain's capacity without any stress. When a person's eyes and ears are completely engaged, his or her concentration is improved automatically. AV makes the learning more interesting, as well.

Gamification:

Bloomsburg University professor Karl Kapp explains that interactions like games can be used to encourage study and to reinforce training. Gamification of training can help learners gain and retain new skills. Many organizations and universities are following this pedagogy nowadays.

Mobile:

Mobile devices are very effective for e-learning. People carry their mobile devices with them everywhere, so they can start a study session anywhere, anytime. Smartphones also have multiple options for communication.

Need analysis

This need analysis concerns the online learning infrastructure. The primary users of the online learning infrastructure are:

- Partners involved in the project;
- Members of families
- Learners
- Stakeholders.

The project's partners will use the online learning infrastructure to:

- Communicating;
- Exchanging ideas and local experience of the given country;
- Presenting learning materials;

Partners' needs and content of platform

- E-learners and participants should know or be able to do by the end of a course and how learners can demonstrate their learning. Setting a target and a goal achieves two critical goals. First, learners will know why the course is important and how it will help them in the future. Secondly, targets help keep course content focused.

- Each screen in a course should convey one idea, and one idea only. It keeps a learner focused on the most important ideas, one at time.

- Transform complicated and dense text into a visual representation of the information. For example, if the text explains a process, could you show the process visually instead with a flow chart, video or infographic? Visuals stimulate thinking and help solidify concepts lost within large blocks of text.

The online learning infrastructure should provide partners with a messenger app, collaboration tools as well as applications to create forums and wiki. A repository for the project documents should be implemented using for free software, e.g, Google drive, Dropbox.

A repository of best practices would be useful.

E-Learning Technology

There is a continuum of e-learning software with simple HTML on one end of the spectrum and complex, enterprise-wide Learning Content Management Systems on the other. One of the secrets to successful e-learning implementations is to choose the correct software for the correct need. The e-learning software must satisfy the needs of the online learner, the online instructor and, in many cases, individuals in an administrative capacity who must track and maintain learner records. Generally, there are five types of e-learning software that can be used alone or in combination. These are:

- Programming Languages
- Authoring Packages
- Learning Management Systems
- Content Management Systems
- Learning Content Management Systems

Messenger app

A messenger app enables a messaging function between two or more people. This type of technology is becoming the most popular way to send messages.

Partner will use the messenger app exchange short messages quickly. They will use it for urgent communications, e.g., to ask support during their travels for transnational meetings or to send information about changes during the training activities.

There is variety of messengers apps. These are some of the most popular:

- WhatsApp
- iMessenger
- Snapchat
- Facebook Messenger
- Skype chat

There are also beside these the most popular other platforms that support live-video communication:

- Dingtalk – Communication platform that supports video conferencing, task and calendar management, attendance tracking and instant messaging.
- Lark – Collaboration suite of interconnected tools, including chat, calendar, creation and cloud storage, in Japanese, Korean, Italian and English
- Hangouts Meet – Video calls integrated with other Google's G-Suite tools.
- Teams – Chat, meet, call and collaboration features integrated with Microsoft Office software.
- Skype – Video and audio calls with talk, chat and collaboration features.
- WeChat Work – Messaging, content sharing and video/audio-conferencing tool with the possibility of including max. 300 participants, available in English and Chinese.
- WhatsApp – Video and audio calls, messaging and content sharing mobile application.
- Zoom – Cloud platform for video and audio conferencing, collaboration, chat and webinars.

Virtual conference

A Virtual conference app allows remote participants to access live onsite meetings and events from their computers and smartphones. Partners will use this app to organize virtual meetings.

There are three types of virtual conferences:

- Video conference: it allows participants to not only hear but also see each other during a meeting by means of a computer video camera and microphone or the built-in camera of mobile device.
- Teleconference: it connects meeting participants via phone lines. This can be accomplished through landlines or cellular devices, which allows numerous people to connect simultaneously from multiple locations. It includes telephone conferencing, phone conferencing and audio conferencing, etc.

- Web Conference: it is an umbrella term used to describe the process of using the Internet and a web browser to connect individuals or groups together from separate geographic areas for educational or training webinars, collaborative online meetings, video conferencing, or live presentations in real time.

There are many free apps for Web Conference:

- Skype
- Zoom
- Temas

Technological solutions of e-learning platforms

Programming Languages: The most common programming language for online learning is Hyper Text Mark Up Language which is better known as HTML. It is possible to develop a simple, online lesson using straight HTML. However, the use of straight HTML does not provide for a high level of interactivity or interaction on behalf of the learner. Most online learning sites that are based on programming languages add items like Java, JavaScript, PEARL, or even CGI scripting to increase the level of interactivity between the learner and the software. Programming languages provide a great deal of flexibility and freedom to the developer when creating online learning. The difficulty is that maintaining customized sites and developing in a programming language can be a cumbersome task for an instructor. In addition, most instructors do not know enough programming to develop an effective site.

Authoring Packages: These packages are designed specifically to overcome the difficulty most instructors have with using programming languages. Most authoring packages are visually oriented so the learner does not need to know any coding. The software performs the coding "behind the scenes." All the instructor needs to worry about is placing the correct information in the right place. He or she inserts an image, highlights text or moves objects around the screen with a mouse. The software takes care of coding interactions and functionality in the background.

These authoring packages include Macromedia's Dreamweaver and products like TrainerSoft and Lectura. More and more of these packages are being made available by various vendors. A drawback of many of these packages is their inability to track and monitor the performance of a multitude of learners over time. These packages are typically designed for the creation of a lesson and immediate feedback to the learner but not for long term storage of performance data. In addition, most of these authoring packages do not have features that enable interaction in "real time" between and among students. These packages don't have chat rooms, threaded discussions or two-way audio features. They are limited in terms of learner interactivity.

Learning Management Systems (LMS): These systems are specifically designed to track the performance of a multitude of learners. They can be academically focused like Blackboard, e-College, or WebCT, or more focused toward corporations like Docent, Saba, and Click2learn's Aspen. There are literally hundreds of academic and commercial Learning Management Systems from which to choose. The commonality among LMS e-learning platforms is that they can track and store user performance on built in assessment; they can track the number of hits to a certain area of the site; and they can track the amount of time a learner has spent in a certain area of the course. These systems allow learners to register for courses. Once registered, the system will automatically send reminders to students to take a required online class. These systems allow for the management of most administrative functions. Students can check grades, turn assignments into virtual drop boxes, chat with other students, and participate in special group areas where only designated group members can enter.

Content Management System (CMS): While it is critical that learners are managed properly, another management issue with online instruction involves the tracking and cataloging of graphics, sound files, video files, and text files. A CMS helps instructors catalog, track, and manipulate content used in online courses. For an individual instructor or a person working alone, content management is usually not a critical element. The instructor has some CD-ROMs or content on their workstation and simply remembers where a certain file is stored. When multiple instructors are creating courses, the task of managing content becomes more difficult.

A CMS is a database of content which is assigned keywords and extensive search capabilities so that an instructor or developer can easily locate what he or she is seeking. The instructor might type the key words "business person" and receive a listing of photographs, line art, and video clips all containing individuals in a business setting. A CMS is effective when large numbers of instructors are all focused on developing courses and have a desire to reuse content in a variety of courses. Reusing content cuts down on development time because, instead of creating a new image of a business person, the CMS allows the instructor to simply find an existing image.

Learning Content Management Systems (LCMS): These systems are simply a combination of several types of e-learning software. Most LCMS provide the capability of tracking users, the ability to author content, and the ability to store and retrieve content when needed. These "mega"

packages allow an organization to have an enterprisewide solution that takes care of every e-learning software need. If the systems are implemented properly and used appropriately, they can be cost effective. Unfortunately, many times these systems are implemented into organizations without a clear understanding of how they will be used and without a plan for maximizing the functionality of the system. To effectively use an LCMS, training and instruction must be provided.

Use your online learning tool or LMS to structure your content in a logical sequence. Certain LMSs have the functionality to lock modules of an online course guaranteeing that learners systematically progress through the material. Add audio clips, videos, PPTs, and PDFs to your online course to improve engagement, and 3D graphical displays of information that move dynamically are invaluable when it comes to presenting complex topics. You should also pay attention to the length of the module and duration of the video, as it needs to capture the imagination of the online learner, and not allow them to get bored.

Other Software solutions

The e-learning software you select must meet the needs of your teachers. Good e-learning software will help you launch live classes, create self-paced or scheduled courses, and use an online content library to store all your digital sessions. Additional features such as an integrated eCommerce portal and mobile application may be present in the LMS as well. Also some have plagiarism checkers incorporated within the LMS which enable the instructor to keep a better check on learners.

Online collaboration refers to the tools and platforms people use to work together within a digital environment. In most cases, it refers to how people work together over the internet.

Collaborations tools allow people to work remotely on the same project and documents.

The collaboration tools that can be useful for the ElISE project are:

- online word processor with sharing options;
- online forum, this is a great way to foster community to express their opinions and collect suggestions form stakeholders;
- wiki, this is a software to edit, publish, and manage hypertext pages on the internet.

Tools for teachers to create of digital learning content

To enlarge access of participants to variety of content and to allowe-learners to be more creative there are some useful sources to use:

- Thinglink – Tools to create interactive images, videos and other multimedia resources.
- Buncee – Supports the creation and sharing visual representations of learning content, including media-rich lessons, reports, newsletters and presentations.
- EdPuzzle – Video lesson creation software.
- EduCaixa - Courses in Spanish language to help teachers develop the skills and competencies of learners in areas such as communication, entrepreneurship, STEM and big data.
- Kaltura – Video management and creation tools with integration options for various learning management systems.
- Nearpod – Software to create lessons with informative and interactive assessment activities.
- Pear Deck – Facilitates the design of engaging instructional content with various integration features.
- Squigl – Content creation platform that transforms speech or text into animated videos.

- Trello - A visual collaboration tool used by teachers and professors for easier coursework planning, faculty collaboration, and classroom organization.

External repositories of distance learning solutions

To follow other solutions and good practices there is a plethora of examples to follow such as:

- Brookings – A catalogue of nearly 3,000 learning innovations. Not all of them are distance learning solutions, but many of them offer digital education content.
- Common Sense Education – Tips and tools to support school closures and transitions to online and at-home learning.
- Commonweatlh of Learning – List of resources for policymakers, school and college administrators, teachers, parents and learners that will assist with student learning during the closure of educational institutions.
- Education Nation – Nordic countries have opened up their learning solutions for the world for free, supporting teachers and learners during the school closures.
- EdSurge – Community-driven list of edtech products, including many distance learning resources for students, teachers and schools, covering primary to post-secondary education levels.
- European Commission Resources – A collection of online platforms for teachers and educators, available in 23 EU languages.
- GDL Radio: a collection of radio and audio instruction resources.
- Global Business Coalition for Education – List of e-learning platforms, information sharing platform and communication platforms.
- Keep Learning Going – Extensive collection free tools, strategies, tips and best practices for teaching online from a coalition of USA-based education organizations. Includes descriptions of over 600+ digital learning solutions.
- Koulu.me – A collection of apps and pedagogical solutions curated by Finnish edtech companies to facilitate distance for pre-primary to upper secondary learners.
- Organisation internationale de la Francophonie: Resources for primary and secondary school students and teachers for learning and teaching French.
- Profuturo Resources: Spanish language resources in different subject areas for primary and secondary school students.
- UNEVOC Resources – Tools, guides, MOOCS and other resources collected by UNESCO's International Centre for Technical and Vocational Education and Training for continued learning in the area of TVET.
- UNHCR – An extensive list of over 600 distance learning solutions from the United Nations agency for refugees.

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Learners' needs

The learners' needs concern three aspects:

1. The use of the learning platform
2. The use of distance learning tools
3. The availability of customized learning paths.

Learners should access and use the e-learning lectures organized in learning units. Learners should access the learning units according to their learning capacity.
For this purpose, an e-learning platform should be available. It should be accessible anytime and anywhere. It should also be compatible with any browser and any access device, ensuring that all its page elements and functionalities are complete and arranged as the original page design.
Learning content should be organized in order to allow customized learning.
To attend distance learning lectures, a set of devices and software tools are necessary. They should be easy to use in order to facilitate learners' activities. Moreover, a high level of interactivity should be provided to allow participatory learning and peer learning, as foreseen in the project proposal.

E-learning platform

The e-learning platform should provide a complete set of learning functionalities and an uncomplicated interface, e.g., with an easy drag-and-drop functionality.

The learning platform should be available for free and should be easy in navigation as it is possible:

- Allow users to view their progress by making the past, present, and future of the material all very clear. This will keep them grounded in their approach to the material.
- Make sure your drop-down menus are concise. Don't add too many options or too few.
- Use color to make the most relevant information "pop." Supplemental material can be less colorful.
- Unlock the navigation, letting users skip forward or review old material as they please. Give them complete control so that they can access exactly the information that they need.
- Choose a navigation style carefully. Maybe your course will follow horizontally from left to right or vertically from top to bottom. Maybe you will have a course outline at the top of a screen for easy skipping, tabs, or visually-oriented grids. If your audience is not very tech-savvy, a simple format with "next" and "back" options might be best.

Conclusion

The customized learning paths should be realized, taking into account the capability of learners.
In implementing the learning modules, partners should identify the knowledge required for understanding the learning units. Accordingly, they should create integrative materials to fill the eventual learners' gaps. A webpage should be implemented that shows the list of learning modules and their related learning units. Users are informed on the knowledge required to understand the various learning units if any. Accordingly, users can acquire the knowledge necessary to understand the content of a specific learning selecting the links to integrative materials.
Moreover an application should be implemented to analyze the learners' behavior and refine the learning strategy. For this purpose, each leaning unit should include a final test. The test results should be analyzed to identify relevant learners' difficulties and improve the corresponding learning units, include additional learning materials, or suggest internet searches.
Finally, the learning infrastructure should allow learners to collaborate to achieve their learning goals. For this purpose, functionalities should be implemented through which learners can receive suggestions and advice from other learners in order to solve a learning problem.
In this regard, a blog or a similar app can be activated by learners.