

Transitional Objects: Moving from extrinsic to intrinsic motivation in e-learning environments by using User Experience (UX) Design.

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Abstract— The very essence of User Experience (UX) as design- and research field is extended motivation for users. Even if it comes in different shapes, motivation is always present. When it comes to learning it is well-established that motivated students learn much more easy. Despite this, the design of IT supporting learning lack of focus in UX. It is also important in order to get students to develop motivation originating from themselves, i.e intrinsic motivation, and not from the external source, i.e. extrinsic motivation – which is the most commonly appearing motivation when it comes to learning in general. A transition is needed from extrinsic to intrinsic motivation. This transition happens when the student come into transitional states. These are facilitated by, so called, transitional objects, which can be the usage of pedagogical tools of different kinds, raising the level of UX. In this paper, we highlight and explain the notion of transitional states and exemplifies some good examples of existing tools, i.e. transitional objects. The notions of transitional states and - objects show the great potential of becoming great tools to understand and design better-learning environments on the basis of UX.

Keywords—*intrinsic motivation; extrinsic motivation; transitional object; transitional state; motivation; e-learning; User Experience; UX*

I. INTRODUCTION

In design of Information Technology (IT) user motivation is key. However, motivation comes in different shapes and from different directions. It can be motivation to complete a task in time at work or it can be playing a game where the motivation to use the technology *itself* is the motivation. The motivation can come from within the person or from outside, for instance, the employer, the authorities, the parents etc.

In particular, motivation is even more in focus when it comes to designing for User Experience (UX) (c.f. [1], [2] and [3]). This is a sub-discipline in IT development and IT research and it is quite recently developed branch of the tree of the research discipline of Human Computer Interaction (HCI). It is still in its' development phase conceptually [4]. Even though,

some basics are set and pinpointing and extending users motivation is one of those [5].

When it comes to IT and UX in relation to learning there are a number of initiatives done(c.f [6]). One example is so-called, Game-based learning (c.f. [7], [8], [9], [10] and [11]). This work invites aspects from gaming into learning. All with the purpose of extending levels of motivation.

In this paper, we present this notion of transitional states, as a way of expressing and articulating motivation types and levels for students using learning technology. We demonstrate how a focus on these states is valuable for thinking about the use of e.g. infographics or graphical presentation tools, not just as presentation tools, however, as transitional objects which help learners to move between extrinsic and intrinsic motivation. The concept of transitional states and transitional objects are developed and further explored. Finally, we conclude by giving examples of application areas of usage of the concepts as well as sharing our view of how to take this research further into future work.

The rest of this paper is structured as follows. First, related work in relation to learning and motivation is presented. Then, the notions of extrinsic and intrinsic motivation are further pinpointed. Following this, then the notion of transitional states is presented. Tightly coupled with these are transitional objects. This is discussed and exemplified by sharing two real world examples, where these transitional objects are, so called, infographics and a presentation tool. Finally, the paper is concluded by extracting thoughts from the process into interesting future ideas for research of this extremely important subject of motivation in relation to learning.

II. MOTIVATION AND LEARNING

It is reasonable to take for granted that motivation is a key factor for learning and without motivation, it is hard to learn. The research on motivation (e.g. [12], [13] and [14]) pinpoint that, of course, this is the fact.

Specifically, in IT research, throughout the years, fun and entertainment have been a territory explored as highly potential when it comes to extending of motivation in learning (c.f [16]). For instance, edutainment has been a term used (c.f [17]; [18]) as well as Crossmedia (c.f [19]). These initiatives are still valid, but the body of research is not growing rapidly

and it seems as the HCI research when it comes to learning, has changed focus throughout the years.

III. EXTRINSIC AND INTRINSIC MOTIVATION

Opening the black box of motivation, research states that it should be understood in terms of being either *intrinsic* or *extrinsic* motivation ([12], [13], [20]). This is, either as motivation coming from within the person, or motivation triggered externally, outside of the person [15].

Understanding motivation as being either extrinsic or intrinsic has implicitly become a black or white image. Either you see a person extrinsically or intrinsically motivated. Period. This is problematic in more than one way. Beyond this categorical way of understanding motivation, there is a need to understand how people can design and use pedagogical tools in learning processes, and accordingly there is a need to acknowledge the transitional states between extrinsic and intrinsic motivation. Instead of seeing things in black and white, there will focus on shifting colors and considering the shades of gray continuously transition into other color states.

Both of the two types of motivation is good enough for enhancing the chance of learning [14]. Either you are motivated by someone else, for instance, a teacher, a parent or a friend, which is extrinsic motivation, or, if the motivation comes from yourself, i.e. intrinsic motivation. Examples of situations where extrinsic motivation appears are for instance traditional learning situations in classrooms, where an inspiring teacher motivates students to listen and learn. Another example is when two friends talk and one motivates another in learning a topic. There could be many more examples here. In general, when extrinsic motivation happens, it is quite clear and in a sense "measurable" by a third person. You could watch a situation and understand that the interaction between people involved caused extrinsic motivation. Extrinsic motivation, on the other hand, is a state that occurs in a much more subtle way within a person coming from causes inside the person itself. Playing games is a very traditional example of intrinsic motivation. It is very easy to get motivated from the playing in itself. You are also interested in the gaming in itself and not only of the result, i.e. the process and the product is often of interest here. In extrinsic motivation, that is not necessarily the case. That is often more result oriented, i.e. I am motivated to do x in order to achieve the result y.

IV. TRANSITIONAL STATES

In general, having intrinsic motivation is more durable when it comes to learning. It is a goal to motivate someone externally, in order to later get the person to find intrinsic motivation for the activity. We want to achieve a transformation from extrinsic to intrinsic motivation. This transition is not necessarily easily achieved. One idea is to facilitate this by finding triggers in order to get the receiver, i.e. the student or other, to get into a transitional state by adding transitional objects.

In this paper, the examples given are pedagogical tools, which moves beyond presentation tools such as for instance MS PowerPoint. Below, two examples of this type of transitional objects are presented.

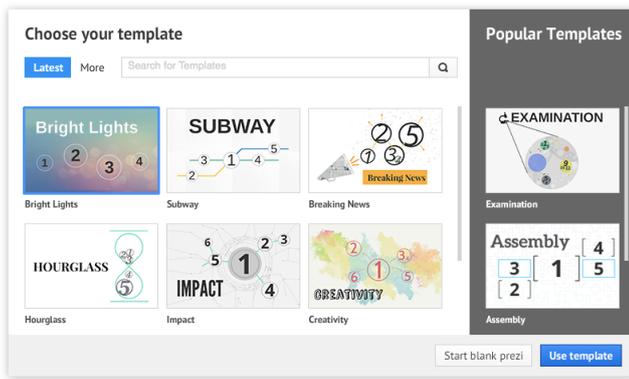
The notion of transitional states is, as mentioned above, coupled with the idea that we need to focus on how we can transfer the receiver, listener, viewer, student or other, from getting motivated from external sources to attaining motivation from within. The focus is therefore on the transition and not only on the two types of motivation. In order to add transfer objects, in this case, digital tools for design and presentation, these transitional states could be obtained by the student. That is the idea to move forward in this work.

V. TRANSITIONAL OBJECTS – 2 EXAMPLES

Transitional objects are the visual and graspable recipes to use in order to make the transition between extrinsic to intrinsic motivation possible through the transitional states. The latter is not visible or graspable in the same sense and, therefore, the scope here is to focus on the transitional objects in order to show the potential of the transitional states. The objects in this article are tools that take both the pedagogical design process of making the presentation into account, as well as the presentation in itself, i.e. when the material is presented to the audience. The first example, presentation tools – here exemplified by a tool called Prezi – focus both on the design process as well as the presentation phase. The second example, infographics tools, do the same, however in this specific example, i.e. visually - more focus is in the design phase. Other tools where infographics are designed can be more general, also supporting a true UX presenter support.

A. Presentation tools

Nowadays, there are a number of different tools to facilitate presentations and they focus on different things. One of these is Prezi (www.prezi.com). This is an example of a tool for design and presentation of interactive and aesthetic presentations. It is a tool for users that are not very familiar with production tools for designers. The tool Prezi has standard templates for presentation. However, the interactivity and graphic choices still make it inspiring to use for the presenter and to view for the receiver. In the initial usage of the tool, the user is guided in a tutorial, which makes it highly usable. This is the most obvious choice as of the user audience, i.e. not necessarily design- or technical experts. Below, screenshot from a design of a presentation is shown.



Screenshot 1 Prezi (www.prezi.com)

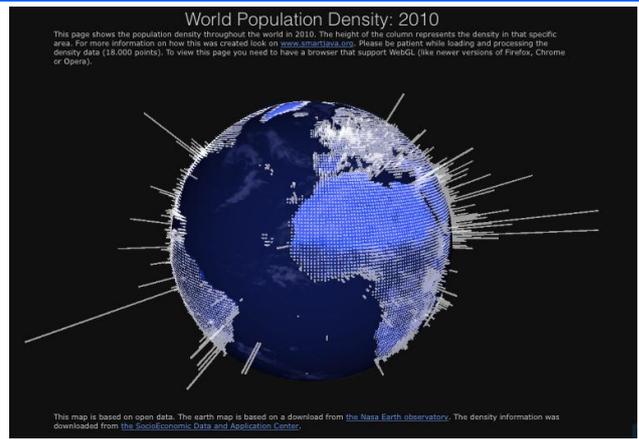


Figure 3: Screenshot 1 Infographics made at Visual.ly (www.visual.ly) visualizing population density in regions/cities in the world.



Figure 2: Screenshot 1 Prezi (www.prezi.com)

B. Infographics tools (Visual.ly)

The other example exemplifies the category of infographics tool. The term Infographics originates from information visualization (e.g. [22], [23], [24] and [25]) and has up until now been a time-consuming act only conducted by skilled graphical designers, often collaborating with some kind of computer aid in order to lift out the required data material in accessible form to visualize into high quality graphically designed infographics. With this type of tool, other people than designers can do this process for themselves.

This type of tool originates from the need to visualize data – large or small data sets, your own data or data captured on the web. MS Excel and similar has features for this type of need. However, the templates are very standardized and layout options are narrow. Further, earlier tools like MS Excel only help with the data visualization and not with incorporating this into a nice presentation layout which is often the case in high standard Infographics. Visual.ly is an example of a tool for non-designers to generate aesthetic infographics of data material. It could be used either as a tool for print material or as a tool to produce material for all types of digital formats and platforms such as presentations, web pages, movies etc. Below, just some brief examples of infographics made in Visual.ly.



Figure 4 Screenshot 2 Infographics made at Visual.ly (www.visual.ly) visualizing time it takes to build apps compared to other stuff.

VI. CONCLUDING REMARKS AND FUTURE WORK

Motivation and learning are tightly coupled. User Experience (UX) design is a great source to use in order to design motivating learning technology support since motivation is the key focus in this field. Further, it is important to find ways to put the user or student into a state where the motivation comes from within, i.e. intrinsic motivation. Other motivation, extrinsic motivation, for instance, initiated from teacher or another external source, can be transformed into intrinsic motivation through transitional states. This could be done by using transitional objects. Examples shown here pinpoint presentation tools and design and usage of infographics as good examples of this type of transitional objects.

To transfer an externally pushed motivation to a motivation coming from within is highly desirable – for any tutor. However, not easily retrieved. The notion of transfer states and transfer objects show great potential for future research work. The tools showed in this paper could be further analyzed and more aspects can be shown to be helpful in learning. Future work here is to make controlled studies of the ideas in this paper. This could be done by collaboration with teachers who are interested in using the two types of

transition objects, i.e. presentation and infographics tools in their work in learning. Researchers can take role of facilitator in working with the tools as well as conducting observations, interviews and other types of data collecting for final analysis.

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