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Research article

Implicit Learning Centered, New Media-Based Instructional Model

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Abstract

Keywords:

New media
Instructional design
Media-based instructional model
Implicit learning

There's always a good deal of demand for new instructional models, especially the kind of models that are empirically tested and statistically validated, that is, scientifically proven to work. But when models are also experiencing with either new, outlandish and/or old, dusty learning theories, things can easily become interesting. While literature and research continues to pile up on popular learning theories mostly revolving around learning experiences and MOOCS – which seem to be the newest trend – most tend to forget or ignore that learning is, first of all, intrinsically fun and it's the kind of fun which is innate. This article aims to provide not only evidence of a partially-validated instructional model based on new media, harnessing the power of a dusty learning theory – implicit learning, but also a guide on how the instructional model should be replicated and used by educators.

Zusammenfasung

Schlüsselworte:

Neue Medien
Lehrendesign
Medienbasiertes Lehrmodell
Implizites Lernen

Es gibt immer viel Nachfrage nach neuen Lehr-Modelle, vor allem die Art von Modellen, die empirisch getestet und statistisch validiert sind, das heißt wissenschaftlich erwiesen das sie wirken. Wenn aber Modelle im kontakt mit neue, fremdartige und/oder alte staubige Theorien kommen, das kann leicht interessant werden. Während Literatur und Forschung weiter auf beliebte Lerntheorien anhäufen, meistens revolvieren sie rund um Lernerfahrungen und MOOCS - welches der neueste Trend zu sein scheint – die meinsten neigen zu vergessen oder zu ignorieren das Lernen ist, vor allem, Eigen Spaß und es ist die Art von Spaß die inhärent ist. Dieser Artikel zielt darauf ab, das es nicht nur Hinweise auf ein teilweise validierten Lehrmodell auf Basis neuer Medien bietet, waren es die Leistungen einer staubigen Lerntheorie nutzbar macht - implizite Lernen, sondern auch eine Anleitung, wie man das Lehr-Modell von Pädagogen wiederholt und Gebraucht werden kann.

1. Conceptual framework

In a previous article (see Schwartz, 2017) I was arguing how building a certain new media-based instructional model can harness the potential of implicit learning as it is defined by Reber (1989). In order for learning to be considered implicit, it has to be characterized by „two critical features: (a) the process must be unconscious and (b) it yields abstract knowledge" (Reber, 1989 pp. 219).

Since the term *new media* is semantically self-sufficient and requires no further defining, I can continue by presenting what we mean here by *instructional model*: a versatile methodological framework, following a certain instructional strategy, made up of core and auxiliary components, anchored both in theoretical fundaments and empirical findings.

The instructional strategy revolves around harnessing the potential of implicit learning. But why go through the trouble of tackling instruction from such an angle? It is exactly because implicit learning occurs *unconsciously*, which means that the learner will not experience any perceived fatigue as a result of the activity. And while this strategy can prove troublesome and requires considerable investment into identifying what actually works and what is efficient, toppled with a less degree of efficiency compared to straightforward instructional models, the payoff is the lack of perceived fatigue while learning.

Of course, this angle brings about another problem: can this activity actually be called learning? I would argue that it does, if we just consider learning as an activity aimed at acquiring new knowledge – and I would continue by adding – regardless of the kinds of knowledge acquired.

Allow me a slight change of perspective for a moment: while some of us enjoy taking long walks or doing sports in our spare time, activities involving learning still make up the bulk of our leisure time. Reading, watching television or motion pictures or engaging in new media are all learning-centered and/or learning-driven activities in the sense that the recreational component of the activity revolves around the satisfaction we get from *learning*: what happened to the character in the book we're reading, what our distant relatives were up to during their weekend trip when surfing social media, or what new mechanics will our video game reveal after passing the current stage.

According to the Bureau of Labor Statistics, in 2016 „watching TV was the leisure activity that occupied the most time (2.7 hours per day) accounting for just over half of leisure time, on average, for those aged 15 and over" (ATUS, 2017, pp. 2).

Since the instructional strategy of the model is centered on the benefits of implicit learning and considering the widespread use of new media for recreational purposes, the model follows a pretty straightforward approach: to use new media in such way as to ensure the implicit learning of what is intended.

The finality of the instructional model can be whatever the educator requires: either a competence, skill, set of skills, informational content – virtually anything the educator wants to teach and can find relevant media for. The model's design will be obviously shaped by its aimed finality, but only at the levels of content selection and distribution within the model.

Since the question of *what to teach* has been answered, the obvious question that needs to be addressed next is: *how to do it.* This is where the model begins to shine, since a quick answer for that would be: *you don't really need to*.

Most of us tend to forget that our primary aim as educators is – or should be – to ensure learning of intended content occurs. Whether or not it occurs mainly and as a direct consequence of us teaching is irrelevant as long as we can adjust our methods in such way as to eliminate as much of the *teaching* – as we all know it – as possible. Why try to avoid teaching? Simply because it's difficult and requires not only solid training and experience but a fair amount of talent, which – speculating – may be one of the reasons why good, effective teachers are in such short supply, even after following years of training and lifelong learning programmes throughout their careers.

2. Introducing FMIM

In the case of this particular conceptual model which we will refer to as the F*ormative* M*edia* I*nstructional* M*odel* (FMIM) the framework is based on principles derived either from theory, empirical study results or both.

Its structure implies that the educator studies and deconstructs competences, skills or content into core components which can be stressed through use of various media content throughout the instructional programme.

The three-layered model is based on the following elements: cognitive layer – concepts, information and skills; types of content layer – conceptual stressors and integrators; dynamics layer – expressed in cognitive tension and tension breaking points (Fig. 1).

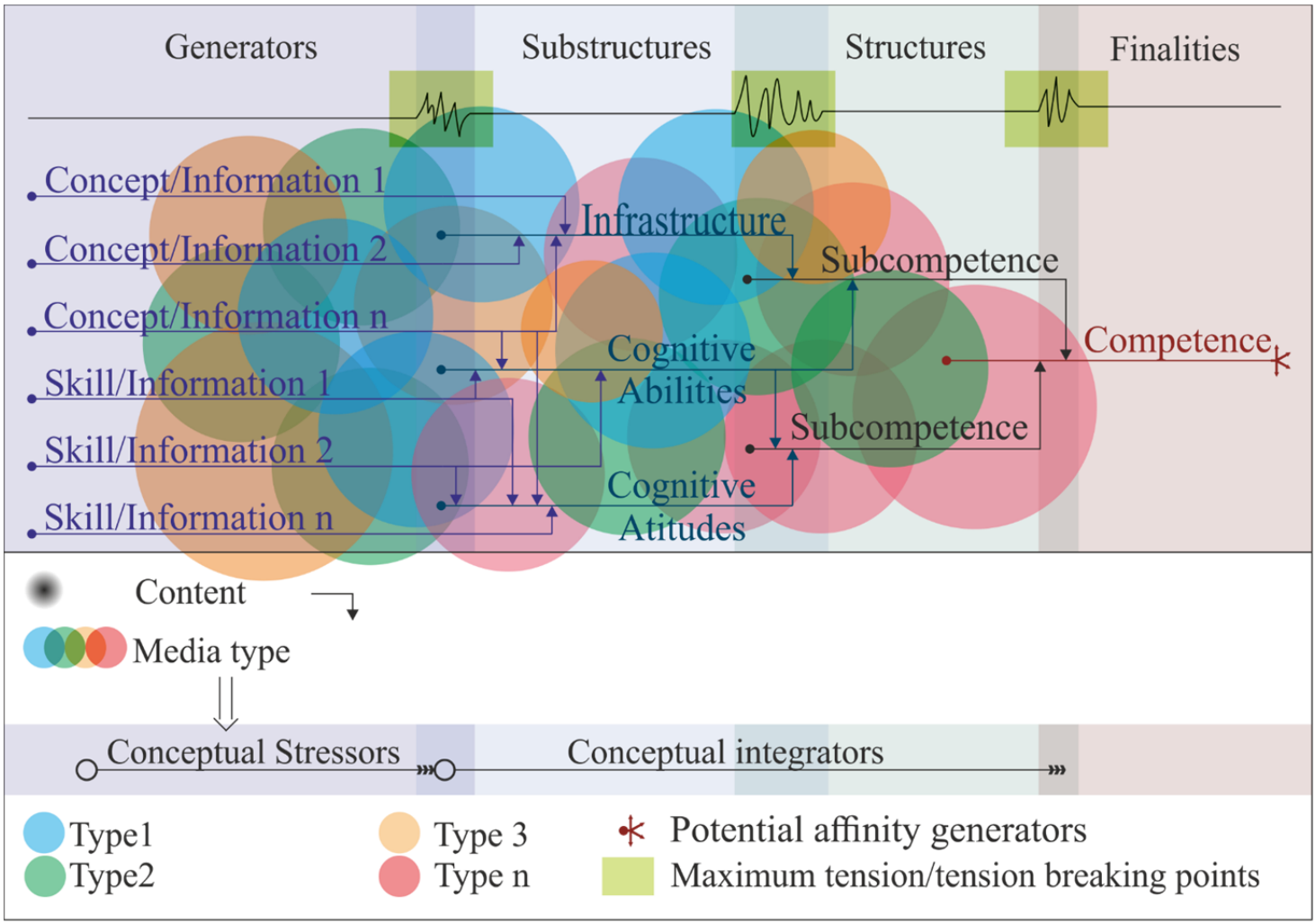

Figure 1 *– FMIM model diagram*

Generators represent the first identifiable, independent type or class of information, skill or concept that composes the substructures of a competence, content or pretty much anything that could be considered a finality of a learning endeavor. Thus, some of the generators of dance – as a competence – could be rhythmic perception skills, motor skills, breathing control skills etc. – and they are only a fraction regarding a single aspect of what a competent dancer is skilled to do and understand.

Substructures and structures represent sets of generators that allow for various fractions of the competence to be formed. For instance, a substructure of critical thinking as a competence may be a certain degree of cynicism when confronted with claims or the ability to accurately analyze and interpret information, while a whole structure of the same competence is the entire attitude or ability that set the premises needed for critical thinking to emerge.

Since today's technology allows for delivery of the same content packaged in various media types, conceptual stressors refer to a certain content packaged in a certain media type. Conceptual stressors are used to stress various generators while conceptual integrators target whole, already coagulated substructures, structures or the whole competence. For instance, let's assume that one of the generators we are trying to stress is the concept of empathy, as an independent concept required later, in conjunction with other concepts, to form the cognitive scaffold of a certain competence for social workers. The first conceptual stressor may be a text silver-lining the concept, the second a short video, the third a motion picture or a recorded course on related topics touching empathy and the fourth, a video game which demonstrates the concept at a whole different level.

Conceptual integrators tend to cover whole structures or substructure, making it easier to integrate individual concepts into dynamic and interactive constructs. Since motion pictures, television series and video games usually do a fairly good job at delving deep into the problematic of the theme they revolve around, can constitute conceptual integrators for many instructional purposes.

The structure of the model presupposes a gradual introduction of concepts, masked by various media. The masking of concepts accounts for at least two effects if implemented adequately: (a) ensures the learner's engagement by means of intrinsic motivation and (b) cumulates cognitive tension. Needless to say, in order to obtain the first effect, the material has to be intrinsically interesting and/or engaging. In order to obtain the second effect, a two-step progression needs to be carefully integrated the design: (1) up to a point, the succession of media presented must be seemingly unconnected until it reaches (2) a point where it starts revealing a subtle, perceivable silver-lining.

After the second step has been reached, the educator can introduce the concept formally or via other media. At this point, the learner has presumably accumulated enough tacit knowledge to ensure that formal introduction of the concept comes as a satisfactory revelation.

3. Building a formative media instructional programme FMIP:

I encourage educators to design and apply dedicated programmes according to their learner's formative needs. Conceptual stressors, although fairly hard to identify, a process that, at this point requires a trial-and-error approach, are present throughout the internet, mostly in the form of entertainment media.

The design process of a FMIP requires nine distinct steps:

1. Identifying, and defining the competences or content intended to be learned. This process ensures that the second step will be carried out adequately.

2. Identifying the structure and composition of the targeted competence or content. During this step, the competence or content is dissected into core and auxiliary components which will help in the identification of the generators.

3. Identifying and selecting generators. During this step, the generators will be selected according to: (a) their weight and importance within the competence and (b) the quantity of available content to select and transform into conceptual stressors.

4. Identifying the content. This step is probably the most troublesome and represents a cornerstone in the design process. If the content selected does not adequately and specifically stress what is intended, the whole programme might yield little to no results at all. However, if the previous steps were conducted carefully, and the generators were appropriately isolated, finding content transformable into conceptual stressors is merely a matter of time and effort.

5. Selecting the content. This step is meant to ensure the proper classification of identified content in different categories according to the learning needs, programme length, target population and difficulty level. What I mean by difficulty level is the distance or proximity between target population's current level of understanding and the level of understanding required for the emergence of the targeted competence. The resulting classification will primarily yield two types of content: conceptual stressors and conceptual integrators.

6. Distribution of content. Conceptual stressors and integrators will each be separately distributed in such way as to ensure a progression aimed to facilitate the emergence of effects mentioned in the previous sub-section.

7. Setting up an initial challenge or problematization. The initial problem will take the form of a conceptual incentive, namely content that will start to stimulate, preferably, a group of generators containing a dominant one. The main requirement of this content is to carry emotional weight for the learner, since it may boost interest on the subject/topic.

8. Ensuring the build-up of cognitive tension. By design, the distribution of content should be checked order to ensure that the

learner builds cognitive tension as progressing through the content.

9. Ensuring the existence of sessions meant to formally introduce concepts. By design it's intended that formal introduction of concepts, notions or terms to act as revelations which will release or partly release previously accumulated tension. However, tension accumulation may be contextual, and its measurement requires permanent contact with the learner, meaning that in some cases, the formal introduction may be best carried out earlier or even later than anticipated, according to the feedback perceived by the educator.

4. Governing concepts of the model

The essence of the model consists in the creation of a completely informal framework, aiming in fact to form competences specific to formal education, through strategic channeling of the spontaneous media intake. In the attempt to mimic as closely as possible natural informal education environments, the concepts governing the model are identical to some characterizing informal education activities: inherent curiosity, intrinsic motivation, natural learning, familiarity with the means of education and freedom of preferential selection, metacognitive self-regulation and affinity spaces.

Inherent curiosity inevitably implies intrinsic motivation fueling exploratory approaches, thus being directly responsible for seemingly effortless investigation, together ensuring an auspicious psychological environment for learning.

The importance of familiarity in learning has been empirically highlighted in several studies (see Reynolds, Sitharaman, 2000; Brown, 2006). By association, it is emphasized that learning through familiar means will also provide the resources needed to assimilate different means, and preferences will in most cases be those with which the learner is familiar (Shaffer, et al., 2016).

Freedom of preferential selection of learning means not only adequately addresses differences in learning styles (Schmeck, 2013), but also to ensures the avoidance of perceived irrational forms of constraint on educational means from a learner perspective. The freedom of choice of educational means is limited in fact only by the availability and/or knowledge of their existence and utility. In the absence of an explicit prohibition in the choice of means, one can't form a perception of constraint, but an absence of possibility at most, which does not involve the negative emotional valences associated with perceptions of constraint.

Metacognitive self-regulation (see Khosa, Volet, 2014, De Backer, Van Keer, Valcke, 2014) implies the freedom to set and explore one's own learning strategies, either individually or at group level, preferred, indispensable for the temporal efficiency of the amount of information retained or the level of skill. When stimulating an exit from the comfort zone and/or attempting a new approach or strategy, there is a risk of perceived constraint or pressure from the learner, which, depending on personality, may result in reactions from very different to diametrically opposed.

Affinity spaces are of crucial importance (Gee, 2005; Neely, Marone, 2016; Jackson, 2016). These are spaces for the development of knowledge, through socialization and learning in the virtual space, based on common interests, namely affinities, acting as knowledge-generating environments. These immaterial structures appeal to interests, often embodied in real passions for various subjects, and in optimum conditions possess a huge transversal or interdisciplinary capacity. Motivated by contributing to the level of knowledge of the whole space, its members foster the formation of a meritocratic system but without hierarchies or requiring inclusion as a member in order to contribute. They form autonomously and develop to the point of specialization of the participants in their niches or their migration to other subjects of interest, often derived from the knowledge acquired from the affinity space.

The governing concepts of the model act as methodological guidelines to be followed when developing FMIPs. Since they define the philosophy of a conceptual model, the success of the resulting FMIP depends to a large extent on how the designer manages to accommodate and exploit them.

5. Empirical evidence of a working FMIP

The conceptual model was used for designing an instructional programme aimed at developing critical thinking.

5.1. Research methodology

A quasi-experimental study was conducted on a gender and age homogenous sample of 271 high-school students from four educational institutions in Arad, Romania.

Hypothesis of the research: the participation within the FMIP predicts a significant increase in critical thinking.

Even though the participants were randomly assigned, the educational institutions were selected according to the criterion of access to the required technological means hence the study is referred to as quasi-experimental.

The study was structured in three phases: (1) pre-experimental assessment; (2) implementation of the FMIP and (3) post-experimental assessment. The experimental phase lasted for two months and two weeks.

The assessment tool used was comprised of a critical thinking test, an adaptation of the Watson-Glaser critical thinking appraisal (see Watson 1980; Wilson, Wagner, 1981; Hassan, Madhum, 2007).

Since the FMIP's design presupposes free involvement within the programme, the control and experimental groups couldn't be assigned randomly and were thus assigned according to participation, with the control group not choosing to take part within the programme.

5.2. Research results

The experimental group was comprised of 136 participants 50,2% of sample, while the control group totaled 135 participants 49,8%.

Since the criterion of assigning groups risked yielding distorted results, a regression analysis was conducted on first

instance test score differences in relation to participation in order to check for biases (Fig. 2).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,120[a]	**0,14**	**0,11**	,498

a. Predictors (Constant), ScorGC

Figure 2. *Participation bias reflected in first instance testing scores*

As shown above (Fig. 2) a bias was indeed observed, R=.120, but it only accounted for 1.1% to 1.4% the increase in scores obtained in the first instance testing.

Regression analysis conducted on scores obtained in the second instance of testing – post-experimental – indicates that the FMIP accounted for 18.2% to 18.5% increase in scores (Fig. 3), thus confirming the hypothesis that the programme predicts a significant increase R=.430, in critical thinking.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	,430[a]	**0,185**	**0,182**	4,463	,185	61,166	1	269	,000

a. Predictors, Participare

Coefficients[a]

Model		Unstandardized		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	24,434	,383		63,852	,000	23,680	25,187
	Participare	**4,240**	,542	**,430**	7,821	,000	**3,173**	**5,308**

a. Dependent Variable: ScorRGC

Figure 3. *FMIP (Participare) as predictor for increase in test scores*

As indicated above (Fig. 3), obtained test scores were increased by 3.1 to 5.3 points for the experimental group.

No significant correlation was observed for scores obtained by the control group in the pre-experimental, compared to post experimental testing sessions.

5.3. Research limitations and methodological issues

Since the model's design implies voluntary participation, random assignment of control and experimental groups poses a problem in the sense that even after changes in initial testing scores are taken into account when calculating the programmes efficiency, at least one variable still remains uncontrolled: the affinity or readiness for learning in general of the participants who choose to get involved in the programme. This means that until a better methodology is designed for testing FMIPs, results will be impacted by this variable and its impact is, according to this research design, unquantifiable.

Conclusion

Since the increment in scores was in the 18% pool, given the circumstances of trying to develop such a vast competence as critical thinking in such a short time, without employing conditionality in terms of rewards or penalties for either participation or performance, I could argue that FMIP can be considered a success. It yielded formative results without any perceived effort from the learner, by merely leading the learner's media intake on a formative path.

Under these circumstances, we can only consider the programme ineffective if we assume it prevented other, more formative activities from taking place in the allocated timespan or if the learner perceives the programme as it is – an instructional activity – and not a recreational one.

While the conditions which ensure the programme is perceived as an informal or recreational activity exist, the FMIP can be considered a viable candidate for a tool with the purpose of educating without instructing.

Surely, both the conceptual model and the FMIP developed here require improvement as does the methodology for testing its effectiveness. Hence further attempts to validate – or even invalidate – the model are greatly encouraged since we have no need for perfecting ineffective models – too many educational systems seem busy doing it already.

What I feel we need are more alternatives to reaching our goals as educators and since so much information is now at a mouse click's distance, it would be a waste not to exploit it to our ends and thus, the learner's benefit.

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