

Unconventional Micro-Learning: Theory And Structure Of Microlearning Units

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Abstract

This research addresses the critical problem of identifying the critical parameters and framework that can be useful in developing an educational model that addresses the education sector of children and youth who live in highly unstable life. This instability can be caused by natural risks and disasters such as the Covid-19 pandemic that appeared late 2019 and still is affecting communities at large. It could also be manmade, such as wars, high political instabilities worldwide, or deteriorating economic situations that last at least few years, causing serious impediments in the education system of a society. This research addresses the viability of using Micro Learning Technique (MLT) within a flexible learning scheme as an educational solution for students who live hardship life as refugees. Previous research (Hazboun, 2022) looked at education development in unstable student societies that enhanced the concept by looking at student community living in refugee camps in the northern part of the Palestinian territories, due to the Covid pandemic time in a place that is subjected to restrictions by military presence of an occupier. Another research (Abbasi, 2022) was carried in Jordan, examining the music education provided by the Jordanian music teaching facilities to Syrian refugee students, examining the challenges and difficulties facing them. The purpose of this research is to develop an enhanced and integrated approach to addressing the education of a particular subject, and present recommendations for a model of teaching to student communities that suffer a highly unstable life.

Keywords: Microlearning, Refugee education, Microunit design, Unconventional Learning, Flexible Learning, Digital Learning.

Research Problem and Challenge

Background

The need for an education-detailed framework that could lead to a model for learning can be well designed in an efficient and effective way to help students who live very hard period of their life. Such a framework to be effective and suitable for such communities has to accommodate critical facts of the student community (Al-Suwaidi, 2010). As an example, refugee students especially kids and youth, are very often mistreated, and looked down on them. Such treatment comes not only from fellow students,

but also from teachers and other host citizens whom they encounter in their daily life. Syrian refugees are subjected to bullying, violence, and discrimination in their life and schools, no matter how strict the authorities try to control such injustice. For example, girls from the Zaatari refugee camp recount that teachers made statements to them such as “you have ruined your country” and criticize their presence in Jordan. Parents, themselves in highly vulnerable situations, may not report such incidents for fear of drawing attention (Skidmore, 2015).

Two samples were chosen and studied. The first was a sample of students in some refugee camps were questioned about the model of learning applied by schoolteachers and students in the North of the West Bank in Palestine (Hazboun, 2022). The second was refugee students of Syria in Jordan (Abbasi, 2022). Research focused on the methodology, curriculum and plans of teaching music to children and youth of Syrian refugees who live in Jordan.

The Research Problem

The research problem that is addressed is to find an efficient, feasible and adaptable model of teaching to facilitate learning for students living in difficult social context, combined with the lack of teaching resources and education environment. In particular, the teaching of subjects that are aimed to enhance not only the knowledge but the skills of students, who live a difficult education life due to social and economic hardships. Additional considerations that are discussed include facet of creativity and not that of tradition scholastic teaching like other subjects, for which students are tempted to react faster in learning.

This model is developed for teaching music to Syrian refugees' communities. The specificity of this situation lies in the fact that students, and special attention in this research is given to children and high school level, who suffer complex and serious situations of problems and pressures that permit them from "normal" and regular learning through education and pedagogy in practice. To put it in perspective, the research problem is to develop a model that has the following characteristics and capabilities:

- ✓ The model should help the students to be prepared and assisted towards providing access to a formal program of primary and secondary education that is provided by the host government.

- ✓ The chosen model for music education delivery for refugee students should be in a way that serves best, using scarce resources as effectively as possible and that are comparably more cost-effective per student. A major priority is focus on using existing resources, such as school buildings, Syrian refugees who are teachers, etc.
- ✓ The model should be very flexible to enable two different future scenarios: the first one in which the student refugees leave soon so their learning, no matter short, is brought with them to build on in their next residing place, be it back to Syria or elsewhere, and the second is which students stay longer term so easier to integrate in the host country education life in a fruitful learning process.
- ✓ There should be cross-cultural and bridges in the learning process, and although Syrian and Jordanian students essentially have a lot of common in culture (such as language, history, nationalism, etc.) yet specific traditional habits, accents, folk songs, etc. are still different. This causes fear among refugees, especially if they are young, hence public efforts should aim to reduce, or at least not inflame, host-community tensions through education policies (Miller, 2018).
- ✓ The model should be able to highlight and maintain the Syrian identity among refugees so that Syrians can return home,

with encouragement to enhance cohesive Arab identities so minimizing tensions among people of different social background, religions, and ethnicities.

In particular, this research focuses on the application of this new model on students who live away from home, in a different place, under pressure of war and instability of peace and security, as well as economic hardship,

The Challenge

Based on an interview with active music teachers and activists for the refugee camps in Jordan (Al-Ashmouty, 27-4-2022), with special attention to young Syrian refugees, it was evident that music teaching of refugee students cannot be left anymore to improvised, individual and short music teaching activities in the camps. In addition, integrating refugee students in regular Jordan music schools and universities has been relatively limited, mostly because lack of financial resources and also unstructured integration in the student body, so refugee students feel welcome, and helped as much as possible. There are enough grounds to reach the conclusion that integrating refugee students in regular Jordanian schools cannot be the best solution. The challenges that exist in music education are many, but some of them are so persistent, yet they form the general characteristic of the desired education model needed. These include the following:

- ✓ The music education curriculum for the refugees should be concise and composed of short modules that can be managed easily and in a fast way. Also, the modules should be related in such a way that the student who completes a set of these modules can be described as he/she

finished a program, like a short diploma, a stage in a teaching paradigm, etc. which can be used to build on in other future programs.

- ✓ There is a definite need to link these refugee music students with music schools or conservatories in Syria and develop cooperation to exist and work with partner Jordanian schools in Jordan
- ✓ It is also wise and beneficial to encourage non-Jordanian schools (such as Syrian Music Conservatory in Damascus to open a long-term music education for Syrians as well as anybody who wishes to study music in Jordan, in direct partnership and cooperation with a Jordanian music school. For younger students, it is necessary to carry on from time-to-time certain evaluation processes and act accordingly (Rousseau et al., 2005).
- ✓ The model should be attractive and provides grounds for resource mobilization, trying to find not only financial resources, but also artistic support and social admiration. Mobilization should include of course efforts to raise financial resources, donations of instruments, and improved venue for music learning for the young refugees interested to study music (Howell, 2020).

Microlearning: A Concept and a Pedagogical Approach

A Preview

Although the general framework of learning is common to almost all types of teaching models and processes, one could not neglect the fact that this general framework helps only as a general one, and it is left to strategists and experts in education to derive a pragmatic and efficient model that can be implemented in order to serve a particular community of students. The principal concern is to define a method whereby an efficient and effective model is designed in a way to address certain constraints, restrictions and challenges facing the target student community. Search for such a method could become a difficult task.



Figure 1: Conventional Learning Pyramid

The role of information and communication technology has made it possible to transform passive methods into active ones in the collaborative learning scope: group discussions, practice, and teaching others.

Discussion groups are effective in stimulating learners' thinking. This is normally done in digital learning environment especially among teachers and parents of children which facilitates real-time chatting, message boards, or instant messaging (Igoa, 1995). An advantage of discussion groups besides the main goal of learning collaboratively, it provides learners with

Conventional learning is visualized as a pyramid (Lalley & Miller, 2007) of seven components, or steps. Figure 1 shows this paradigm. In this research, we reproduce this pyramid as a three-tier framework (shown in figure 2), which identifies the significance of collaborative learning apart from the conventional learning step of classroom-oriented education: i.e., attending lectures and reading whether in classroom or virtual classroom, and whether hardcopy reading educational material or using electronic media content. This is useful to facilitate the planning of micro learning, as shown later.

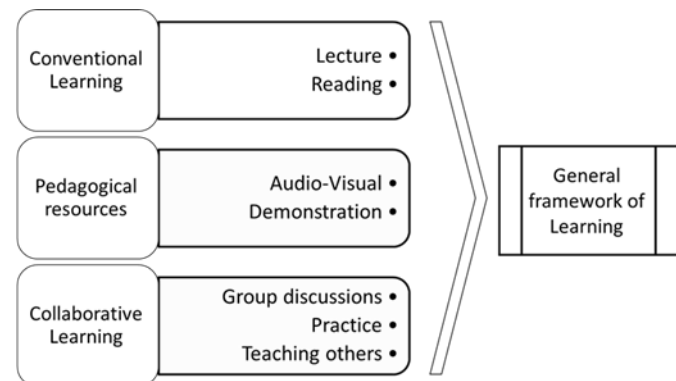


Figure 2: A three-tier view of the Conventional Learning Pyramid

the opportunity to learn a variety of skills such as teambuilding.

It is generally agreed upon by education experts that a key to master a subject is by teaching it to others and share learning. If learners can accurately teach a subject to others, they will have strong grip of the concepts.

One other significant role of collaborative learning is to facilitate and share generated content, i.e., knowledge to learn, through producing content (normally electronic) because of the learning process and shared with other learners. Simplest form of such content can

be podcasts, videos, infographics, presentations, short videos and more.

A simple model of a learning process

A learning process is composed essentially of the well-defined study methodology and education approach skills whether the knowledge that is to be learned is in the form of physical items such books, etc.) or digital like software application, electronic items (such as files, images, videos, etc.,) or practice and educational processes in actual real life. The learning process could be in any combination of these in any way or percentage that is appropriate to the learner.

In the learning process, the student observes data and knowledge made available through time element and subjected to conditions of progress in learning while conventional learning is when the student is supplied by all the knowledge and material needed to be learned, whether actual material or electronic, in physical presence or distance learning (Singh & Thurman, 2019).

The teaching of subjects may, and in most cases will, require different approaches and methodologies. In some cases, such as teaching math and history, the difference is quite noticeable. It is even more noticeable and different in teaching subjects like music, art, painting etc. where innovation and creativity are impacting concepts as well as affected by social and psychological trends. Furthermore, if the students and / or the education milieu and environment is not conducive or normal, such as students who are refugees of war and violence, a more proactive methodology should be used.

In principle, the traditional learning processes are studied closely, and are

characterized by criteria that are generic and enhanced in different ways. These can be described as follows (see figure 3):

1. **Learning-driven Content:** The content is expected to provide the specific needs of students for learning, roles, and responsibilities. This content would require perhaps special skills and knowledge to access and benefit from.
2. **Granularity:** the content should be provided in different units or segments with a lot of detail specialized detail on a short topic) and to facilitate the assimilation of new knowledge and allow flexible scheduling of time for learning.
3. **Content engagement:** pedagogical and learning methods should be creatively designed and used to develop an engrossing and inspiring learning experience.
4. **Interactivity:** There should be numerous opportunities for learners' collaboration needed to sustain attention and promote learning.
5. **Personalization:** The fundamental successful learning is the learning content which encouraged the ability to be self-paced, customizable to reflect learners' interests and needs.

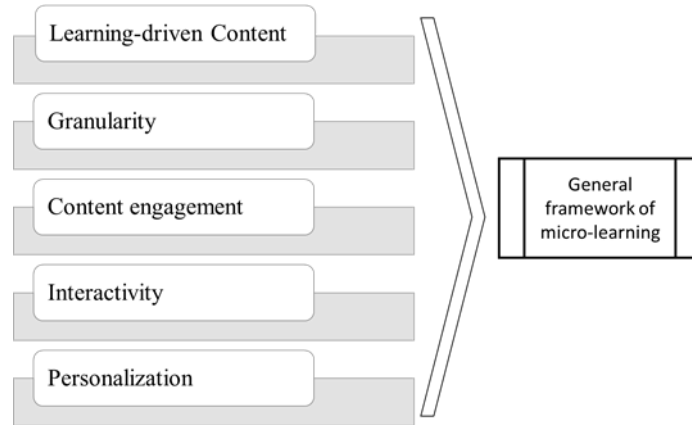


Figure 3: A pragmatic learning framework characteristics

Flexible Learning

The trend of flexible learning is not a new one. Flexibility has been considered as a critical factor in the success of learning. When a learning process is flexible, it may make learning more effective and easier to achieve, considering the particularities of the learner (such as time, abilities, skills, etc. “Flexibility” is defined as offering choices in the educational environment, as well as customizing a given knowledge content to meet the needs of individual learners. In this context, flexibility provides learning choices to learners which can cover learning times, knowledge content, instructional approach, learning resources and of course: location, technology use, dates and communication medium (Collis et al. 1997) and (Goode et al. 2007).

As information and communication technologies advance in steady, fast but effective and efficient way, new learning ways have appeared that can open more opportunities for flexible learning. These ways are least of all conventional, in the sense of classroom setting, teacher and student relations, etc. Unconventional learning ways have proven to be not only the state of the art in learning, but the most promising for ongoing pedagogical

development towards excellence and successful education.

One can generalize and deduce that the key reasons for adaptability and efficiency of such unconventional learning schemes are the options and opportunities they give to the learner to in a way take control of his/her learning process and become more self-determined and independent. At the same time, such schemes make teachers more as learning facilitators (Etene et al. 2016).

With the further development of technologies, in flexible learning environments, barriers that might prevent students from attending a given educational context (e.g., classrooms) are removed. Some researchers believed that flexibility is not only an attribute of students (Ryan & Tilbury, 2013), but also a feature of educational strategies at the institution level, in other words scope of flexible learning has been further extended beyond the dimension of delivery to cover flexible pedagogy.

One way of looking at the ways of enhancing flexible learning is the addressing of these five criterial of microlearning in two separate trends with minimal dependence in each other. This generates an expert process of selecting the student community and student

backgrounds (Personalization and Interactivity) on one hand, and the content of the course as well as the depth and level of the knowledge presented (Learning-driven Content and Granularity) on the other. The content engagement is the actual pedagogical strategy that adapts such

microlearning model to success full learning with high flexibility and easy to adapt to students' community who lives in a very unstable and hard life such as refugees. Figure 4 shows this framework structure in a simple way.

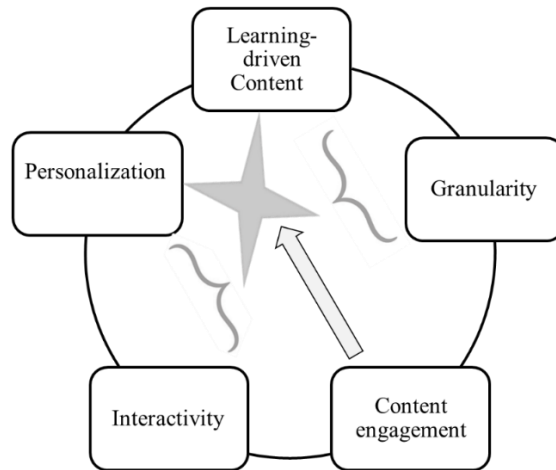


Figure 4: A general framework of micro-learning

Digital Learning

In broad terms, digital learning is the practice of learning through acquisition of knowledge or skills of a particular subject using technology. It involves information communication technologies to support the learner interaction with digital resources and tools designed to help learners reach specific learning outcomes. A major benefit of this learning is that it provides the learner with some control over time, place, path and/or pace. In fact, digital learning could incorporate other strategies of learning, most important of all is blended learning: incorporating effective learning through flexible learning such as mobile technologies or e-learning (Keegan, 2002). A basic principle for digital learning is in fact the dependence on a combination of technology, digital content, and instruction. However, for practical reasons that make it difficult to rely on technology for teaching within the refugee communities, this research did not

focus on digital learning and reliance on information and communication technology for music education. Unavailability of technology devices such as tablets, smart phones, etc. including weak connectivity are some of these practical reasons.

Microlearning: A significant Learning Trend

Pillars to build for Microlearning

This research looked at the impact of microlearning using small microunits of knowledge in a course. It was-observed that there are three essential facts to deal with in the course design process:

- a) The learner personality characteristics pose as a major factor in the success of the learning process, similarly to conventional learning processes.

- b) Knowledge content as the total knowledge (facts, science, text, etc.) that is to be learned, including learning resources such as music instruments, books and exercise manuals, electronic items, and digital applications. These resources will facilitate the learning in a personalized, pragmatic, and effective way.
- c) Human Resources are of course very vital for all types of educational endeavors. In addition to well qualified teaching staff, there is always a need for teaching assistants who are not necessarily academic and scholastic but rather knowledgeable of the subject of the school. These assistants, perhaps can be thought of as junior teachers, have the role of supporting students while learning, coaching them and especially in educational activities that involve developing skills.

Teaching young students music requires such assistance who would be trained to assist the students in practicing their playing music at the instrument of their choice. Another type of human resources needed are social workers (Hietala & Camarada, 2015). If the subject touches personal and social life, it is necessary to have a social worker whose job is to provide personal and human element to the process of education, or better described as living as a student. In music teaching this is very much desired because music touches the personal and special behavior, not to mention music therapy skills and activities. This is a very essential component for student community like those living in refugee camps, being away from their home because of war, hunger, violence, and other risks.

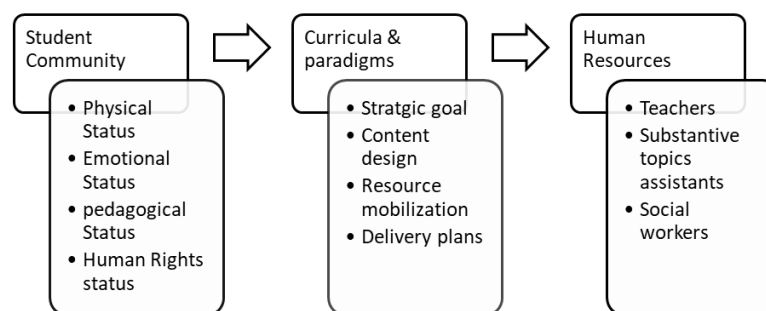


Figure 5: Pillars to build for microlearning

The strategy of Microlearning

This is not a totally new way of learning, neither it is small as the name indicates. It is a highly efficient strategy for learners who want to

improve their knowledge and skills in a short period of time.

Microlearning is a powerful and effective learning method that is best applied with strategies of learning that are affected by different

student community characteristics, unstable learning environment, and other cases. Examples of such strategies are digital learning, blended learning, and flipped learning. The basic concept of microlearning is to use small pieces of information and appropriate multimedia content to teach skills, knowledge, and behaviors. The philosophy of microlearning strategy is to provide learners with the necessary information at precisely the right time.

Microlearning refers to short-term learning in small pieces of knowledge (course material) to be learned. The content can be of diverse types, size and method of access, this strategy of learning can provide access to information in a variety of ways and in a short period of time (Salza et al. 2019).

It is essential to mention here that online learning can present a great help in the

microlearning applications (Picciano, 2017). Especially at the age of mobile-learning (Herrador-Alcaide et al. 2020).

Major advantages of adopting microlearning include the following:

- a) Microlearning improves focus and supports long-term retention of knowledge.

It is a well-known fact that the learner's ability to remember and keep knowledge after learning it relies on different elements. Nevertheless, studies reveal that learners can lose as much as 50% to 80% when learning is not reinforced after the learning process ends.

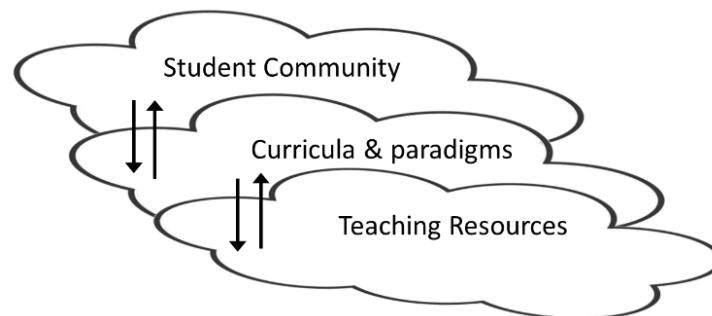


Figure 6: Three-tier microunits design

According to ongoing research (Sh!ft Learning,2020) microlearning improves ability to focus on issues and can easily be remembered. It is important to realize that micro-learning is not a stand-alone learning platform, but rather as an additional strategy to support the main learning process. When the learner adopts a unit of learning, using his/her computer, a day or two after he migrates this small

unit to his mobile, few days later to his pad. This migration of small unities of e-material will help the retention of learned knowledge in the mind of the learner, hence microlearning is an effective way of learning for a longer time at the learner' ability and pace of time.

- b) Microlearning creates more engagement

Learners become bored easily if the material is long, or not to

their liking. Designing the learning module into small units of knowledge to learn, and enhance it with versatile technological presentation, the learners will find this more to their liking, hence more success in the learning process.

According to them, large knowledge units, hence longer courses, are not only more challenging to assimilate and retain but engages learners for longer periods of time, which most likely may be counterproductive to the learning objectives.

c) **Microlearning units:** Microlearning is about creating mini knowledge units, so that:

- ✓ They form an integral part of a larger course.
- ✓ Enhance these units by social media content, as demanded by learners
- ✓ Learners get engaged in the learning process with a co-sharing and co-production elements
- ✓ Have each unit somehow linked or attached in part to another module so learners feel that they are attached with strings of learning from one unit to another.

These units are preferred to exclude long unnecessary parts such as history, background information, and theories, and focus on how to benefit, do or point to solutions since learners are looking for knowledge and solutions.

d) Reduction of development costs

It is interesting to note that in creating microlearning in several micro units would incur much less cost for development and maintenance of the whole knowledge body course based on these units. It is much simpler and faster to implement microlearning courses because they are modular in nature. As there would be no need to reproduce teaching manuals and conduct accompanying classroom sessions, the cost would also be less. In addition, there would be no need to pay for the instructor's time, buy or rent physical classrooms and pay for the utilities, and equipment.

Mapping of Microlearning

This strategy can be developed in tandem with design principles committing excellence in course design and implementation,

The learner's personality and specificity generally are least addressed in teaching, as teachers prefer and expect, rightfully so, that students and learners should place an effort to conform to the level of learning planned (Emerson & Berge, 2018). This research was based in the idea of identifying a new interpretation of microlearning, such that it could fit learners in a way that is best fit to their abilities and skills. This is achieved by supporting the education expert / teacher who is designing the course to be able to design and deliver a practical and efficient microlearning platform with a clear vision of what is needed and in what best way can be done. Further research sheds directions of development such as (Zhang & Westm 2020).

The following definitions are essential terms.

Table 1 Microlearning structure

Concept	Description	Conventional learning	Microlearning
A course	A complete knowledge content that forms a complete course for a learner to follow	A book or manual	A complete set of pdf files, videos, recordings and other forms of electronic materials
A module	A course is divided into modules	A chapter of a book a related subject note	A partial set of electronic / and printed materials pertaining to the same module
A unit	A module is divided into units	A section of a book chapter that is a part of chapter topic details	A partial set of electronic / and printed materials pertaining to the same unit
A microunit	A set of sub-Sections in a unit	A subsection of a chapter	A single set of electronic materials / and printed materials pertaining to a specific subsection of the unit
Digital item	Knowledge content in digital form (such as pdf, videos, applications, etc.)	Video or audio to complement lectures	A complete set of varying e-content items (all forms of electronic materials)
Content item	The content of a microunit: knowledge in from of knowledge, science, data etc.)	The summary of the knowledge introduced in a subsection	The actual microunit to be used in microlearning
Personality characteristics	Attributes defining the personal traits and abilities and learning behavior of a student	Student's profile: academic standard, speed of learning, dependability, commitment, etc.	Profile parameters of different types of learners to be used in creating different microunit versions

Conclusion: an approach to microlearning design

This research looked at the impact of microlearning using small microunits of knowledge in a course. It was observed that there are three essential criteria to deal with in the process of the design. These act as the source of a complex set of specifications that can be

considered as essential in the production of efficient microunits and implementation tools of the learning process. These specifications can be flexible and adjustable to suit the goals and objectives of the learning process and the learner, while considering the availability of resources.

We define a symbolic representation of structure of microunits as a cube with several plates horizontal and vertical, crossing each

other. Each crossing can be identified by a single microunit. The overall structures with these microunits form a lattice. The relationships between the different micro units defined by these three criteria would be the paradigm for which the learning path and process follows. This lattice structure is referred to as the Elias Microlearning Lattice as shown in Figure 7.

These three criteria are the following:

a) Student Community

The learner personality characteristics form a major factor in the success of the learning process, similarly to conventional learning processes. The design of microunits should consider strictly the as many aspects of the profile of the learning student (see fig. 7: α). These aspects include, but not limited to, qualities and characteristics:

- ✓ Is the student fast learner or slow?
- ✓ How long the typical student from his learning community can sustain studies.
- ✓ Are there special needs for learning?
- ✓ Do the students involved in the learning process require special education practices or regular student personalities.
- ✓ It is necessary to consider situations when the students who are learning have any special status such as being refugees, or living in hardships, or living sensitive psychosocial situations.

b) Curricula & paradigms

Knowledge content is the total knowledge (facts, science, text, etc.) that is to be learned (see fig. 7: β). Knowledge content is normally well defined, but the way it is presented is another issue. It can be presented in different ways and shapes. The knowledge of a one course is divided logically into modules, and each module is divided into units. Each unit can be structured and split in smaller parts, called microunits. The sequence and requirements of study, following prerequisite rules etc. would lead to a logical path that connects these micro units. The learning paths that are formed will provide the basis for a curriculum. The different ways of arrangements of these microunits would provide the flexibility and efficiency of learning suitable to different types of students.

c) Teaching Resources

Teaching resources (human and technology) are the real critical factor that affect the success of the learning process (see fig. 7: γ). Irrespective of the level of students, and type of the learning community, along with the curricula and knowledge content, the teaching resources are key because through the proper delivery of knowledge facilitates the learning process. They include not only qualified teachers and teaching assistants but also physical tools and instruments, as well as software applications with digital devices.

An analysis of several cases and qualitative analysis, in addition to looking at different case studies, it is possible to view these three factors as a three-dimensional space, where a lattice holds nodes uniquely defined by the values

determined by each of these three factors. Each node is identified by a complex representation (ϕ) expressed as a function of the values related to these three dimensions. Figure. 7 shows a diagram of such idea, called the Elias Microlearning Lattice.

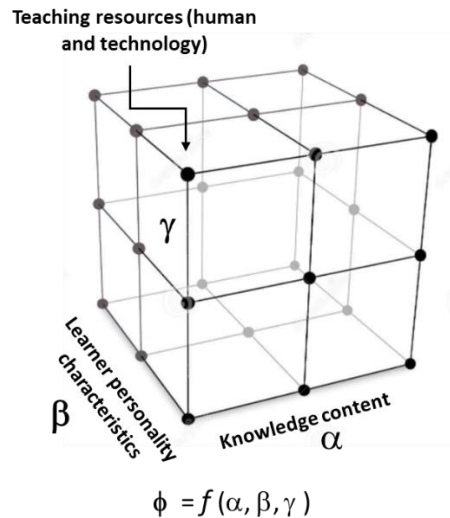


Figure. 7: the Elias Microlearning Lattice

Figure. 7: the Elias Microlearning Lattice

Each of these facts become a decisive factor in the design and development of a platform for micro learning. It is possible that a quantifiable or describable items and qualities can be derived in such a way to contribute to the learning process success. The interdependency of these three items will define logical and scientific scenarios for the microlearning for a particular learner and a particular set of microunits using the proper resources (teachers, books software, etc.).

A method could be developed along which the formulation of micro units can be done once these three criteria are well modelled and established.

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