

Akdeniz University Publishing
Publication No: SM9

The 8th International Topical Conference

ecoMEDIAeurope Network

**e-Competence: Needs and Demands
of Innovative Education**

EDITORS:
ALİ SABANCI
AHMET ŞAHİN
OZAN YILMAZ

Akdeniz University

Antalya
2014

e-COMPETENCE: NEEDS AND DEMANDS OF INNOVATIVE EDUCATION

Editors: Ali Sabancı, Ahmet Şahin & Ozan Yılmaz

Proceedings of the 8th International Topical Conference of ecoMEDIAnet Europe Network held in cooperation with University of Akdeniz, National Education Directorate of Muratpaşa District and Azize Kahraman Life Long Learning Centre on 27th-29th May, 2013 in Antalya, Turkey.

LIBRARY INFORMATION CARD

e-COMPETENCE: NEEDS AND DEMANDS OF INNOVATIVE EDUCATION

EDITORS:

**SABANCI, ALİ
ŞAHİN, AHMET
YILMAZ, OZAN**

**Akdeniz University, First Edition, Antalya/TURKEY
2014, vi + 154p, 16 x 24 cm
ISBN : 978-605-4483-21-1**

**ecoMEDIAnet Coordinators
Dir. Herbert EILE (AT)
Dr. DI. Erwin BRATENGEYER (AT)**

**Local Organisation Committee
Assoc. Prof. Dr. Ali SABANCI (TR)
Erdem KAYA (TR)
Şakir ŞEN (TR)
Ahmet ŞAHİN (TR)
Ozan YILMAZ (TR)
Adil ESER (TR)
Fatma ŞAVAŞ (TR)
M. Alev SÖNMEZ (TR)
Halit BOZKURT (TR)**

**Publisher certificate no: 20332
Printing certificate no: 10594
ISBN: 978-605-4483-21-1
Cover Design: Kutlu&Avcı Ofset Ltd. Şti.
Layout: Ahmet ŞAHİN
Press: Kutlu&Avcı Ofset Form Baskı
Address: Muratpaşa Mh. Emrah Cad.
No: 17 Muratpaşa/ANTALYA
Tel: +90 242 346 85 85**

©All parts of the book are protected by copyright. Every use beyond the narrow limitations of the copyright law is inadmissible without the prior permission from Akdeniz University. This is also valid for photocopying, translations and microfilm copies as well as storage and utilisation in electronic systems.

E-competence, Innovative Education and Strategic Learning

Jens Haugan

Headmark University College

Abstract

This article deals with strategic or self-regulated learning from the perspective of new media (ICT). The main goal of the article is to present the basic ingredients of strategic learning according to Barry J. Zimmerman. It will be argued that this perspective on learning – and teaching – should be considered in the further development of e-competence and innovative education.

Keywords: ICT, e-competence, innovative education, strategic learning, self-regulated learning.

INTRODUCTION

This presentation is heavily based on Zimmerman, B. J. 1998: 'Developing Self-Fulfilling Cycles of Academic Regulation: An Analysis of Exemplary Instructional Models'. In: Dale H. Schunk & Barry J. Zimmerman (red.): *Self-Regulated Learning. From Teaching to Self-Reflective Practice*. New York, London: The Guilford Press. 1-19. The main content has been presented at the 8th ecoMEDIA-europe conference in Antalya in 2013 and earlier in 2002 at the Classroom 2020 conference in Norway. After more than ten years, it may seem that we still need to emphasize the importance of collaboration between technical development of e-learning programmes and the pedagogical foundation of such programmes, even though ICT and self-regulated learning, of course, has evolved further during the last decade (which is not reflected in the reference list).

It is often said that pupils' or students' achievement is too poor in many topics or subjects. In some cases, this is explained by claiming that the learner does not work hard enough with some specific task or subject. In other cases, it may be assumed that the change from one kind of school to another (e.g., from elementary/primary to secondary school to high school) is too tough, and especially the change from school to college or university. There may, of

course, be many explanations for the fact that many learners do not become so-called good achievers compared to the expectations of their own or others.

The question is: should one look for individual causes of poor or lacking achievement, or should one instead – based on international research on teaching and learning – rather try to develop a holistic study concept or culture that involves both the educational institution, the teacher and the learner?

On the background of approaches to so-called self-regulated learning, I will here present some ideas about how to combine such a new study culture with information and communication technology (ICT) to create the learning environment of the future.

Responsibility for Own Learning

Everybody has probably heard the term or concept of "Responsibility for Own Learning". The term signalises a clear change from a more or less strictly teacher-coordinated situation to a state where the pupil has to take over at least a part of the responsibility for the learning process. At university level, responsibility for own learning has, more or less, always been the basic principle (even though the term is usually used in connection with school pedagogy and not higher education). University students enjoy(?) great freedom and, very often, they come and go as they please. Usually, university students have very little personal contact with their teacher(s) during the term/semester. For some students this works fine, for others this is a less optimal learning situation. One problem is that many students are not aware of the fact that they actually do have a personal responsibility for their own learning, and that they do not know how to handle this responsibility and the freedom in their study situation.

Self-Regulated and Strategic Learning

By using the term self-regulated learning it is emphasized that the pupils or students must play an active part in the learning process. The term signalises a dynamic relation since the learner has to regulate his own learning or learning efforts according to possible changes in the study situation (which may be internal (personal) or external changes (non-personal) changes). A similar term is strategic learning, which signalises that it is expected that the learner has certain strategies for how to handle the learning situation. I will expand the understanding of learning to include teaching, i.e., strategic learning means that both the teacher and the learner have a set of strategies to regulate the learning process according to the given preconditions. Furthermore, the teaching institution (school or university) should be conscious about this interaction and show a certain responsibility to support both parts in the learning situation.

Barry
self-regul
learning
explain h
inspiratic
Benjamin
despite o
access to
by studyi
people k
results o
self-defir
results t
backgrou
disadvan
Whitmor
situation
says that
learning
to or for
often ver
or her. I
defined
related v
have ch
examina

It is
connecti
the fact
learning
control t
kind of

One
learning
skill, lil
learning
transfor
upon se
model v

Barry J. Zimmerman, one of the central representatives of the theories on self-regulated learning (e.g., Zimmerman 1986, 1989), has done research on learning in academic settings for more than twenty five years. His goal is to explain how pupils and students learn to master the learning progress. One inspiration for Zimmerman have been great American persons like, e.g., Benjamin Franklin, Abraham Lincoln and George Washington Carver, who despite of relative poor preconditions with respect to personal background and access to learning resources have managed to more or less educate themselves by studying on their own, which at least demanded a lot of self-discipline. Most people know someone from their narrow circles who has achieved impressing results only by being goal-oriented and aiming strategically at managing some self-defined task. Zimmerman (1998:1) refers, for instance, also to research results that show that certain immigrant groups seem to have a cultural background that helps them to achieve good learning results despite of several disadvantages in connection to the learning situation (Caplan, Choy og Whitmore 1992). It is obvious that those who do well in an educational/learning situation are more goal-oriented and strategic than others. Zimmerman (ibid.) says that self-regulated learners are distinguished by their view of academic learning as something they do for themselves rather than something that is done to or for them. The typical Norwegian pupil or student, on the other hand, is often very concerned about what he/she believes the teacher is expecting of him or her. It is also typical that one considers the curriculum as something stable, defined or limited in some way instead of thinking of some higher knowledge related value. One problem in this context is obviously that the teacher might have changed his view on learning and knowledge, but that the form of the examination does not reflect this.

It is quite common that pupils and students feel a little uncomfortable in connection with curricula and exams. Very often they are little conscious about the fact that they could have a more active relation to teaching and their own learning. The self-regulated pupil or student has qualities that help him to control the learning process to a great extent instead of defining himself as some kind of "victim" or a bad student.

One central basis in the theories on self-regulated learning is that (academic) learning is not seen as a mental ability, such as intelligence, or as an academic skill, like reading- or writing proficiency. The point is that self-regulated learning is a self-directive process. Through this process the learner is able to transform his mental abilities into academic skills. Zimmerman (1998) sees upon self-regulated learning as a cyclical process. As I see it, Zimmerman's model would be a good starting point for a holistic study culture.

Self-Regulated Learning as Cycle Phases

In theories on self-regulation, learning is usually viewed as a multidimensional process involving personal (cognitive and emotional), behavioural, and contextual components (Zimmerman 1998:2). Cognitive strategies are applied to a concrete task within a contextually relevant setting to master the academic skill. The strategies may vary depending on the type of the task, or the individual learner. Obviously, not all learning strategies work equally well for all learners. Furthermore, self-regulation is applied “bit by bit” during the learning process as skills are developed or acquired. The learner, therefore, has to supervise his own progress and adapt the learning strategies according to the actual status. For instance, while the learner would be occupied with learning the topic specific terminology in the beginning of a study, he would have to concentrate on coherence and contextual understanding at a later state. To learn words and expressions would require other strategies than contextual understanding and integration of knowledge. Hence, it is not only the teaching that develops from the beginning of the term/semester to the exam. The student develops himself and, therefore, has to adapt himself to his own progression.

Learning is, on the other hand, not necessarily a process from A to Z or from the beginning of the term/semester to the end (exam). Actually, it is not that easy to claim that learning is a closed process at all. In the approaches to self-regulated learning it is said clearly that learning is an open-ended process that requires cyclical activity on the part of the learner. Zimmerman (1998:2) views this cyclical learning process in three phases: forethought, performance or volitional control and self-reflection.

About the forethought phase Zimmerman (1998:2) says that it refers to influential processes and beliefs that precede efforts to learn and set the stage for such learning. The performance or volitional control phase involves processes that occur during learning efforts and affect concentration and performance. The self-reflection phase, then, involves processes that occur after learning efforts and influence a learner’s reactions to that experience. The self-regulated cycle is completed by these self-reflections since they would influence forethought regarding subsequent learning efforts.

Zimme
following

The sta
teaching a
the teache
regulated
influencec
learning s
for own l
responsibi
education:
– affect be

The pr
research c

Table1.Zim
Cyclical se
Forethought

Goal settin
Strategic p
Self-efficac
Goal orien
Intrinsic in

Zimme
reference:
investigat

Goal s
outcomes
learning s

Zimmerman (1998:3) illustrates the academic learning cycle phases by the following model:

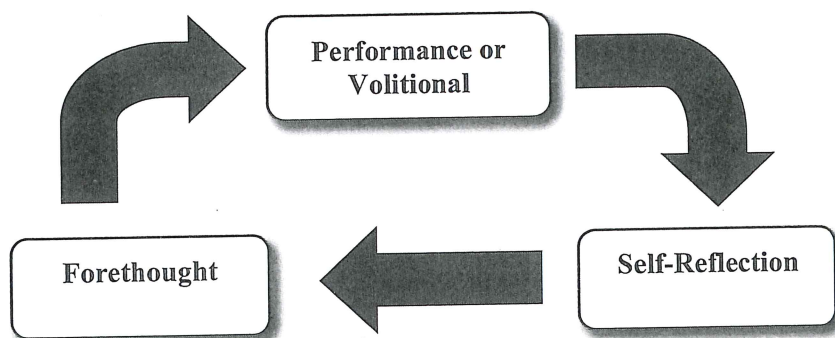


Figure 1. (Zimmerman 1998:3): Academic Learning Cycle

The starting point for a new study culture that is supposed to lead to better teaching and learning must be to create greater awareness or consciousness with the teachers and the learners for this type of learning cycle. Even though self-regulated learning mostly focuses on the learner, it is clear that all phases can be influenced or affected both by the teacher and the learner. Self-regulated learning should, therefore, not be seen upon in the same way as “responsibility for own learning”, which (at least according to the terminology) places the responsibility more or less solely on the learner. If one wants to change the educational system, it is important that changes – especially changes of attitude – affect both the teacher and the learner.

The processes within the three phases have been studied and categorised in research on academic self-regulation, cf. the following table by Zimmerman:

Table 1. Zimmerman (1998:4): Cyclical Phases and Subprocesses of Self-Regulation

Cyclical self-regulatory phases		
Forethought	Performance/volitional control	Self-reflection
Goal setting	Attention focusing	Self-evaluation
Strategic planning	Self-instruction/imagery	Attributions
Self-efficacy beliefs	Self-monitoring	Self-reactions
Goal orientation		Adaptivity
Intrinsic interest		

Zimmerman (1998:2ff.) specifies the key words in the following way (with references to concrete research projects where different processes were investigated):

Goal setting refers to the process where the learner decides on the specific outcomes of the learning, whereas *strategic planning* denotes the selection of learning strategies or methods to attain the desired goals. Those processes may,

then, be affected by a number of personal beliefs (*self-efficacy beliefs*), *goal orientation* and *intrinsic interest* in or valuing of the task. *Self-efficacy* is used as a term to refer to personal beliefs about one's capability to learn or perform at certain designated levels. Naturally, confident or self-efficacious learners would, for instance, set higher goals for themselves compared to those who believe they would not be capable of mastering a certain task. It is also likely that learners with great self-confidence with respect to their own learning capability would be better prepared to choose effective learning strategies than learners who lack efficacy. *Goal orientation*, then, refers to learners focussing on the learning process rather than competitive outcomes. Such learners tend to learn more effectively than students with performance goals. As we all know, having an intrinsic interest in a task has a positive effect on learning. But interested learners are, furthermore, more likely to continue their learning efforts, even in the absence of tangible rewards, as Zimmerman points out.

Even though these points first of all refer to the learner's individual situation – which it is up to the learner to regulate, it is clear that the teacher can do a lot to help the learner to regulate himself and find strategies for the different processes. In addition, it is possible to use ICT-media as support tools during this first phase, as I will discuss after this presentation of the different learning cycle phases.

The performance and volitional control phase, Zimmerman has divided into three processes: *Attention focusing*, *Self-instruction/imagery* and *Self-monitoring*. Zimmerman refers to concrete research projects that show that the learner has to protect his intention to learn from distractions and from competing intentions. He also states that low achievers are more easily diverted from the task and tend to ruminate more about prior decisions and mistakes than those who are classified as high achievers. In Kuhl's (1985) terms this type of volitional dysfunctioning is called "state" controlled rather than "action" controlled. In the phase of volitional control, on the other hand, it is important to take control over the learning process and move forward, which may imply to protect the performance phase from competing forethought phase processes.

The second phase also includes choice of learning strategies or techniques, such as, e.g., self-instruction and imagery, i.e. telling oneself how to proceed during a learning task and possibly forming mental pictures. Zimmerman refers to several research reports that show that self-instruction, verbalisation and imagery could be very effective learning and recalling strategies. Self-monitoring, then, Zimmerman calls a vital yet problematic self-regulatory process because it, on the one hand, informs the learner about his progress (or lack thereof), whereas it, on the other hand, also may interfere with strategic

implementa
complicate
monitoring
After a whi
level. Inste
such as fro
that action.

The thi
into four p
Self-evalu
monitored
learner mi
teacher's (c
students).

Self-re
meaning (c
learner's l
important
personal a
gives up t
personal a
role for th
task. Self-
the self-re
he can co
personal (c
to positiv
performan
that show
directly re
to ability

The l
strategic
errors, wh
learning
approach
strategies
about the
phase of

implementation processes. The self-monitoring process may be further complicated by the fact that as skills are acquired they require less intentional monitoring. This phenomenon is called "automatisation" or "routinisation". After a while, the learner would not need to control his performance on a detail level. Instead the learner can shift the self-monitoring to a more general level, such as from the action itself to the immediate environment and the outcomes of that action.

The third phase of the learning cycle, the self-reflection phase, is divided into four processes: *Self-evaluation*, *Attributions*, *Self-reactions* and *Adaptivity*. Self-evaluation takes self-monitoring one step further by comparing self-monitored information with some sort of standard or goal. The self-regulated learner might, for instance, want to know how he is doing according to the teacher's criteria or possibly compared to other learners (classmates, fellow students).

Self-regulation, among other things, leads to attributions about the causal meaning of the results. For instance, poor performance may be due to the learner's limited ability or to insufficient effort. Self-reflection, then, plays an important role to avoid that the learner attributes poor performance to his own personal ability, which in turn may lead to that the learner reacts negatively and gives up trying to improve. Such attributions can be influenced by a variety of personal and contextual factors. Among other things, it could play an important role for the learner how well other pupils or students have mastered the same task. Self-regulated learners may be different from other learners by the fact that the self-regulated learner would attribute his own failure or problems to causes he can control and possibly change. In the same way, success is attributed to personal competence. Attributions of this kind may be self-protective and lead to positive self-reactions, Zimmerman states, even during longer stretches of performance with meagre learning results. Zimmerman also refers to research that shows that personal attributions of success and failure to strategy are directly related to positive self-reactions, whereas attributions of these outcomes to ability are related to negative self-reactions.

The learning process is enhanced by strategic attributions. Furthermore, strategic attributions assist the learner in identifying the source of learning errors, which again gives the learner the chance to adapt his performance to the learning situation. By systematic variation of learning strategies and approaches, the self-regulated learner would discover the learning strategy or strategies that work best for him in a concrete setting. Positive self-reactions about the personal learning process lead to a better basis for the forethought phase of the next learning cycle. Attribution of success to personal competence

and strategies leads to enhanced learning goal orientation and greater self-efficacy about eventually mastering the academic skill. In turn, this may increase the interest for a given task, independently of the task being chosen by the learner or by, for instance, a teacher, thereby enhancing one of the positive variables in the learning cycle. Because use of self-regulatory processes is inherently cyclical, Zimmerman says, the phases tend to be self-sustaining in the sense that each phase creates inertia that can facilitate or undermine learning during subsequent phases.

I will quote Zimmerman's (1998:5) summary of the discussion on the academic learning cycle phases:

... the forethought phase of self-regulation prepares the learner for and influences the effectiveness of the performance or volitional control phases processes, which in turn affect processes used during the self-reflection phase. These self-reflective processes influence subsequent forethought and prepare the learner for further efforts to achieve mastery.

If one expands the self-regulation model by also including active participation of a teaching supervisor or mentor, one could have the basis for an optimal learning situation. In the modern educational system it is, furthermore, natural to look at what information and communication technology (ICT) has to offer in the self-regulated learning process.

ICT-Support as a Strategy in Self-regulated Learning

In which way may ICT-media be active devices in the self-regulated learning cycle? One possibility would, for instance, be to use a specially designed computer programme to diagnose oneself as an individual learner and monitor one's own performance in a given topic or subject. By computer technology it is possible to create personal learning profiles that can be analysed and that can be compared to other types of data. A specially designed computer programme could, for instance, also suggest concrete learning strategies or tasks on the basis of a personal profile. The learner could, then, during the next phase test his own performance. This could then, again, be compared to the previous phase to assist the learner in his self-reflection process. By using a computer programme as a learning assistant, or possibly a learning strategy, one could perform active logging of personal performance and request computer generated suggestions about, for instance, relations or causes, that are not necessarily that obvious for the learner (or teacher) himself. This kind of computer assistance could, for instance, also enhance the self-reflection process.

Additio
another pe
ensure tha
human pr
self-regul
here, to l
alone.

A cor
and intera
other lea
communi
it would
conscious

Given
other, are
system o
integrated

Refer

Caplan, I
and A

Festinger
Relat

Kuhl, J.
Regu
Beck

Zimmer
are th
307-3

Zimmer
Acad

Zimmer
Regu
Schu
Teac
Pres

Additionally to such a “self-regulation support programme”, one could have another part that could be open for the teacher or mentor. In this way, one could ensure that the computer generated analyses and suggestions are followed up by human practical-pedagogical competence. It would, of course, not be a goal in a self-regulated learning and teaching model with ICT-support, like it is discussed here, to leave quality control and following up of the learners to a computer alone.

A combination of ICT-supported self-regulation and human communication and interaction could, furthermore, be to share the personal learning profile with other learners in order to discuss performance and strategies in a learning community. This variant would probably not work in all learning situations, but it would have many advantages with respect to learning effort and personal consciousness about learning in the right context.

Given the assumption that computers (i.e. ICT media), in one form or the other, are expected to play an increasingly important role in the educational system of the future, it is important that the technical development is closely integrated with learning theories based on self-regulated learning.

References

- Caplan, N., M. Choy & J. K. Whitmore. (1992): ‘Indochinese Refugee Families and Academic Achievement’. In: *Scientific American*, February issue. 37-42.
- Festinger, L. (1954): ‘A Theory of Social Comparison Processes’. In: *Human Relations* 7. 117-140.
- Kuhl, J. (1985): ‘Volitional Mediators of Cognitive Behavior Consistency: Self-Regulatory Processes and Action Versus State Orientation’. In: J. Kuhl & J. Beckman (eds.): *Action Control*. New York: Springer. 101-128.
- Zimmerman, B. J. (1986): ‘Development of Self-Regulated Learning: Which are the Key Subprocesses?’. In: *Contemporary Educational Psychology* 11. 307-313.
- Zimmerman, B. J. (1989): ‘A Social Cognitive View of Self-Regulated Academic Learning’. In: *Journal of Educational Psychology* 81. 329-339.
- Zimmerman, B. J. (1998): ‘Developing Self-Fulfilling Cycles of Academic Regulation: An Analysis of Exemplary Instructional Models’. In: Dale H. Schunk & Barry J. Zimmerman (eds.): *Self-Regulated Learning. From Teaching to Self-Reflective Practice*. New York, London: The Guilford Press. 1-19.