IT TOOLS IN INITIAL TEACHER TRAINING

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ABSTRACT

In initial teacher training, the call to use IT tools, and to integrate them into the virtual learning space, is not conjectural but is an example of introducing new technologies in the complexity of educational sciences. For this reason we approached the use of new technologies in the courses and seminars of subjects from the curriculum of training the future teachers, other than Computer Assisted Instruction (CAI) or Information and Communication Technology (ICT). Thus, as a solution for interactive learning, we have integrated, in other several courses, the smart board "eBeam Engage" linked to a laptop, a projector and a surrounding sound system and computers connected to the internet, therefore IT tools. By embedding them in the act of learning it was watched: overcoming communication barriers facilitate engagement of students in designing and supporting transformative learning activities by using this type of IT instruments in various learning situations; increasing their attendance to courses and, to emphasize the formed skills of the students and to form new competences to them, thus increasing their responsibility for their own becoming. For observing their personal development in these directions observation sheets, questionnaires, e-portfolios and the exams as evaluation instruments were used. After processing the data collected by means of these evaluation instruments, our expectations on enhancing intellectual quality product of the work of the students were justified.

KEYWORDS

Integration of IT tools, eBeam Engage smart board, blended learning, transformative learning.

1. INTRODUCTION

In the knowledge society we live in, we are challenged to use new technologies and the virtual space in all fields. This challenge is even more accentuated in education.

In initial teacher training programs, the use of IT tools and virtual space for training is not conjectural and "appropriate to times", but it is an example of introducing new technologies in the complexity of educational sciences, in the traditional content of pedagogy. Theoretical and practical supports of pedagogy are not put aside, but they are combined with the IT tools, making thus possible the agglutination of information into knowledge, acting as a procedural tool and as a method (such as CAI). It is obvious that the teaching-learning-evaluation methodology undergoes changes when IT tools, which will ensure the unity between technological and didactic-informational aspects of educational relation, are integrated.

We approached the use of new technologies in the courses and seminars of topics from the curriculum of training the future teachers, other than Computer Assisted Instruction (CAI) or Information and Communication Technology (ICT) where they are a sine qua non condition, such as: Theory and Methodology of Curriculum, Intercultural Education (Bachelor level) Docimology – comparative perspective, e-Learning in Teacher Training, Advanced Study of Education in the Community, Quality Management in Educational Organizations (Master level).

Why? As students were less and less interested in learning, in developing their personality based on true values and not of the moment ones, we bent over the things that "fill their day", draws their attention, captivates and motivates them – technology.

So, we have introduced an innovative IT tool, the *eBeam Engage Smart Board*, the most complete multimedia instrument that transforms any flat surface (wall or anything else) into an interactive training space, to make the students more motivated to attend the process of their own becoming and to improve their competencies by using a didactic tool offered by new technologies.

So in the text below we will show a short description and the capabilities of *eBeam Engage*, a few methods of the integration of IT tools in initial teacher training and their benefits for the students.

2. INTEGRATION OF IT TOOLS IN INITIAL TEACHER TRAINING. METHODS. RESULTS

As we have presented in the introduction, having noticed students' smaller interest in learning and participating in academic didactic activities, we decided to increase the integration of the IT tools into their learning process, to give them satisfaction.

By observing students' interest in new technologies and frequent use of their devices on one hand, and pursuing formation of competent future educators, we launched the **hypothesis**: *the introduction in academic didactic activities of IT tools on a larger scale, by using the already known interactive methods but shaped according to new technologies, will lead the students' motivation towards a responsible approach of learning and it will transform them in their formation as specialist in education.*

Due to the technical capabilities and operational flexibility of smart board *eBeam Engage*, we integrated this IT tool [1], connected to a laptop, a projector and a surrounding sound system in the courses and seminars of topics from the curriculum of initial teacher training, others than CAI or ICT (above mentioned, in introduction).

2.1 "eBeam Engage" Smart Board and its Associated Tools

So, taking notice of the existence of *eBeam Engage Smart Board* [2] - one of the next generation of interactivity with its built-in high fidelity JBL speakers and microphone, one-touch recording, wireless keyboard, intuitive scroll knob and interactive stylus -, we proceeded to inquire of its characteristics and possibilities of integration in university's courses and seminars for initial teacher training academic program.

Figure 1. eBeam Engage
(http://www.e-beam.com/support/ebeam-engage/overview.html)

In the superior part of the eBeam there is a *built-in locking feature*, which keeps in security everything exactly where was it left.

JBL Speaker produces and reproduces the sound intensity according to the Volume Control's central button and the two flaps (+) and (-).

eBeam Home Button manages the quick access to the files and personalizes our eBeam experience. When it is pushed, in the surface of the whiteboard it is seen a window with different icons such as: Scrapbook, Web resources, eBeam education suite, Web Browser, Encyclopedia Britannica, Power Point, My Scrapbook, My Recording and Lesson Exchange.

With a *One-Touch Recording Button* (when pushed) and built-in Microphone, it's easy to record audio and video in real time (records, at the same time, what is on the screen and the sound). The built-in microphone has the capability to capture the sounds from the environment, clearly enough.

Interactive stylus, as a component of eBeam Engage (mightier than the sword), allows write and draw with it, use it as a mouse with three-button (including left and right click) which eases the instant access to eBeam software tools. With interactive stylus it can be calibrate the work area of the whiteboard as big as 213 x 152 cm, touching each dot from the working space projected by the eBeam software, when the smart board is active.

Tool palette – which appears on the surface of the smart board when it presses the round button of interactive stylus – allows selecting different kinds of items: the highlighter tool, the pen tool, the text tool, the on-screen keyboard tool, the eraser tool, the mouse tool, the snapshot tool and the zoom tool. The four main places that we can use the Tool Palette are: in PowerPoint, in Scrapbook, on top of all applications (in Screen Annotation Mode) or outside of any application.

Scroll Knob makes easy the navigation into the files uploaded on the computer and shown on the whiteboard surface. Scroll knob lets us navigate everything from PowerPoint and Keynote Presentations to our favorite website, without blocking the display area.

Wireless Keyboard lets us control content from anywhere in the room without missing a beat, having at the disposal a keyboard, a touchpad and the ability to page up and page down, to enter text and navigate the computer attached to the eBeam Engage.

One can say that *eBeam Engage* quickly transforms our aula, seminar room or conference room into an interactive multimedia experience. No more running back and forth between the computer, sound system and other devices. *eBeam Engage* puts everything we need at arm's length keeping presentations and courses/seminars delivery seamless and fun.

2.2 "eBeam Engage" Smart Board, Capabilities

The *eBeam Engage*, being at this moment „the world's only complete multimedia interactive whiteboard attachment, which features a speaker, a one-touch recording mechanism, a magnetic wireless keyboard and a lightweight stylus integrated into a single console for seamless presentations" as it say by the American producers [3], we proceeded to include it in our initial teacher training programs (bachelor and master level), in order to add value to student-centered learning, and mostly to induce transformative learning.

Connected to a laptop or a computer (uploaded with a specific and adequate software for *eBeam Engage*) and at the same time to a video projector, *eBeam Engage* whiteboard offers more hope and help than hype in the process of learning.

Why? Because:

1. *it can provide a nice and easy management of the files* (.doc, .docx, .ppt, .pptx, .xls, .pdf, .jpg, .gif, .avi, .wmv etc) with learning purpose, designed by professor and uploaded in My Scrapbook, for example;

2. *it can develop diverse educational themes into the Scrapbook*, having different kind of tools at disposal, such as: text tool, snapshot tool, marker tool, highlighter tool, eraser tool, shapes tool, select tool etc.

3. *has a huge range of access to the Web Resource* and can connect the interest of the students and professors for the same subject;

4. *it can design a new PowerPoint presentation during the course or seminar*;

5. *can record part or whole course or seminar*, with all the information, written and/or spoken, *which afterwards could be delivered*, all sessions digitally, *to the absent students*;

6. *tutorials are easier to be created;*

7. *it is easy to "wipe the board" without losing any of the content;*

8. *allows to invite participants to log into a shared Scrapbook meeting;*

9. *the voting system allows participants to respond to electronic testing, formative assessments, surveys, opinion polls, games and questions posed by the presenter. The data collected from these keypads is immediately transmitted to the presentation, giving the presenter a better understanding of comprehension;*

10. *let us carry on the way we've always taught and it enhances our teaching.*

We have taken into consideration these capabilities of the smart board and we have mounted it on a wall, thus proving that *eBeam Engage* turns any flat surface into an interactive multimedia environment.

2.3 Methods of Integration IT Tools in Initial Teacher Training

Taking into consideration the capabilities of the smart board and computers' educational software we proposed to facilitate the interactivity and communication of the users, whoever they are, students or professors, challenge and request from the users a proactive, creative, even imaginative attitude, allowing their intellectual development into a "multimodality, adapted to different psychological profiles of those who learn, a perceptive multimodality, coherently shaping the image, the color and sound in composite representations" structure (Ionescu M., Bocos M., 2009) [4]. Of course, the micro-informatics is added to all these characteristics of a multimedia product, the one that ultimately "animates" everything, which makes possible the mixing of things mentioned above into a ready to delivery product, qualitative validated and accepted by the users eager to learn.

By integrating the IT tools with their capabilities in initial teacher training, correlated with the interactive methods, one can move from a transmissive or transactional towards a transformative learning. Knowing that Merizow, the father of Transformative Learning Theory (Merizow J., 2000) provides the existence of three stages [5] in this type of training – critical reflection, development of a reflective discourse and action – our concern was to ensure the framework for such an approach - to offer the students support in transformative learning, such as:

- to benefit the full necessary information, either directly (professor) or indirectly through search (informational and communication technology)
- to have access to IT tools;
- not to be subject to coercion;
- to have equal chances to assume different roles;
- to encourage them to state critical reflections on working hypothesis and solutions;
- to have the will to synthesize different point of views;
- to ensure them the environment to become good listeners and to have empathy.

How have we accomplished these desiderates?

We have proposed the following methodology (see below, dotted) for offering to the students the opportunities to state critical reflections on certain concepts and/or theories, to implement these concepts integrating IT tools at the same time, and to evaluate the outcome of their application in real learning situations, in other words, to produce transformative learning.

A. Access to the all facilities of the Lab of Didactical Technology – computers, *eBeam Engage* smart board (with all the devices), educational software, etc., – from our University;
B. The full necessary information consisting of:
    - electronic course support;
    - Power Point presentations of the learning situations, with tasks to be solved during their daily activity or to be solved separately or in groups during future activities;
C. Approaching the blended learning strategy which has consisted also in integration of IT tools:
    - In face-to-face situations:
        ➢ use of *eBeam Engage* smart board for showing some metaphors, PowerPoint presentations or video clips in the beginning of the learning activity (ice breaking) – related with the content of the course – by professor;
        ➢ involvement of *eBeam Engage* smart board into presentation of prepared files by professor or made by the students, on the basis of which it has been possible, during the course, to highlight relevant issues (key words) with intelligent stylus (underlining or marking them), to modify the content (after reflecting and using the critical thinking) with the wireless keyboard, or to record them;
        ➢ *eBeam Engage* smart board connected to laptop, projector and surround sound system, to "save" and then present the information processed within a team, information that give answers to given or assumed tasks and thus turning them into knowledge;
        ➢ use by the students of the *Gallery* from *Scrapbook* of *eBeam Engage* smart board for building some models or figures;

     ➢ possibility to audio and video recording during different learning sessions with the smart board and laptop web cam, in order to resume and refine them, saved in *My Scrapbook* in the folder of each year of study, subject of that year of study, respectively;

     ➢ use of computers by the students during the courses or seminars for preparing the files on .docx, .pdf, .pptx format with the possibility to underline, to modify them and even to intake them as image and sound, to process them immediately, at home or in a future activity;

     ➢ a continuous coaching offered by the professor using: heuristic conversation, reflection, demonstration, exercises, problem solving, brainstorming, modeling, etc., for providing "the agora" for all the students without coercion;

- In e-learning (virtual environment) situations:

     ➢ possibility to search for information on the internet, others than the ones provided by the professor, but related to the given themes or tasks;

     ➢ facility to remote educational data transfer (the activities performed or even registered) by *eBeam Engage* smart board;

     ➢ opportunity for the students, in groups of two, to write an essay under Google docs, for improving collaborative and cooperative learning and to form the spirit of the team working;

     ➢ exploitation of our University's Moodle platform or "Performer" project platform (for students of "Teacher training for early childhood and small age education" master study program), to store through LMS (Learning Management System) all files requested by a professor and assumed by the students, as a responsibility for forming and developing the competencies for teaching career.

D. The agreement done at the beginning of each semester with students, regarding the percentage from the final grade for attendance in f2f activities, for e-learning activities and for final exam has proven beneficial for the students.

By including all these points (and especially IT tools) in the academic activity, we determined the student to be in situations of interactive learning, of intense dialogue with himself and with the others, of analysis, decision and applied external action, thus in transformative learning.

Comparing our approach in integration of IT tools in learning situations with the approaches of other authors like Tom Barrett [6], Olimpius Istrate [7], Gabriela Noveanu [8] or Kaye Thorne [9], we can state that our approach is related more with its effect in students' personal development under learning umbrella, than only their ability to use the IT tools.

2.4 Results/Effects of integrating IT Tools in Initial Teacher Training

By using observation sheets, questionnaires, e-portfolios and exams as evaluation instruments, we have gathered and processed the data of this research, in order to establish the effects and results of integrating IT tools in initial teacher training.

We would like to start with a first effect seen from the observation sheets. The increased motivation of the students to take part in face-to-face activities that integrated the IT informational and communication technology, as seen on the average presence of the students (percentage) versus the students enrolled.

Table 1. Percentage of students participating in face-to-face activities versus the number of students enrolled

No.	Subject	Students attending %	No. of student enrolled
1	Theory and Methodology of Curriculum	76	155
2	Intercultural Education	54	128
3	Advanced Study of Education in a Community	67	50
4	Docimoloy – comparative perspective	72	50
5	Quality Management in an Educational Organization	48	50
6	E-learning in Teacher Training	84	25
		66.83%	**458**

Comparing the average percentages for students' presence at our courses and seminars that have integrated IT tools – 66.83% - with the average percentage for other subjects which didn't use IT tool – 48.27% - according to the timesheets held by my colleagues who proposed other courses for the same students, one can notice a significant increase, which we presume is due to the extrinsic but also intrinsic motivation of the students. The extrinsic motivation of students does not mean only initiating questions, exercises or problems, but mostly the use of an interactive methodology, in which computed technology (in this study *eBeam Engage* smart board first of all) finds its useful and active role and can attract the student in the process of his becoming as a professional in education, transforming him.

Another effect of integrating IT tools was the overcoming of the communication barriers professor-student and student-student. By providing them an "agora" necessary for free but responsible expression of thoughts, of discursive reflections, students lost their inhibition to ask questions, to actively listen to the answer, to debate others' hypothesis or ideas with arguments, to think and act constructively as a result of deep reflection, which indicates the clear presence of elements of transformative learning. The students' interventions in the learning situations of the professor in face-to-face (f2f) situations, counted in observation sheets, gave an average of 21 interventions / 2 hours course activity – in average, every 5.23 minutes something was debated – and 32 interventions / 2 hours seminar activity – every 3.43 minutes there was a dialogue –, which means a real progress in professor-student communication. The communication student-professor was at the opposite pole. Student's interventions with questions for the professor, an average of 6 questions per course and 11 per seminar, prove that there is still a lot to work on the communication student-professor. The student-student communication was natural, exciting and constructive, especially when they were asked to work on groups or teams.

 But in the virtual communication student-professor the situation is totally changed, positive, students losing their inhibition, emotion and maybe frustrations, giving answers to the professor or easily asking him, within the communication frames, previously agreed upon by both sides. Thus, by e-mails with or without attached files (Word, Power Point, etc), or by messages on Moodle platform or chat, the communication student-professor was easily made. The other types of communication taken into consideration, professor-student and student-student obviously worked very well but, we would like to remind again, within the communication frames agreed upon between the parties. So, the f2f communication and the virtual one at the level professor-student, student-student and student-professor were much improved by integrating the IT tools in the educational process.

We also found that students are learning much better if the teaching activities are enriched with visual images, graphical organizers, than receiving the information in "lecture format". Visual images, animated or not, accompanied by sound or not, displayed by means of IT tools (computer, laptop, interactive board, projector, audio system) and graphical organizers (comparative, descriptive, sequential, cause-effect or problem-solution type) projected with the help of MindMaster software had a major impact in the engagement of student in structuring advanced capabilities of thinking. Including "eBeam Engage" in learning situations, students were able to share, to shape, to prove what they have learned, thus transforming the learning situation the professor proposed, into learning experience gained presented by them.

The presentation made by students, as a result of accomplishing the work tasks, have been another gain for them because, proving a great desire to engage themselves in using the new "eBeam Engage" interactive tool, they asserted their learning sequences in front of their colleagues, analyzing and debating them, under the professor' guidance, which lead to a real/authentic learning. More than that, certain sequences presented by the students were audio and video recorded (or the images of the learning sequence projected on the interactive board were saved) in order to become an example (positive or negative) for a future didactical activity, through the profound implication of the student and creation of transformative learning.

On the other hand, these students' presentations, either learning sequences for themes of the curriculum (Bachelor level, 1st year), Intercultural Education (Bachelor level, 2nd year), Docimology (Master study, 1st year), Education and Community (Master study, 1st year), or a 2.0 Web tool used in education on their choice (for e-Learning for Teacher Training, Master study, 2nd year), have contributed to the development of the content of courses and seminars. Thus, this is another benefit of integrating IT tools in training.

Another result of the impact of introducing IT tools, especially the *eBeam Engage* smart board, was the increased quality of the students' product of intellectual work – their e-portfolios. They contained about 7-9 "products" that were evaluated during the semester, through a constant professor-student communication and at the end of semester, before the final evaluation. Going through the contents of the e-portfolios for each topic, we found that students were concerned to meet the demands expressed by the professors in elaborating

and presenting their thoughts in a fair and responsible way. As the evaluation of e-portfolios represented 35% of the entire grade at the end of the semester, it had a mobilizing effect on the students, their grades ranging from 8 to 10, as follows:

Table 2. Grades obtained at the final evaluation of e-portfolios

No.	Subject	Grade 8	Grade 9	Grade 10	Total
1	Theory and Methodology of Curriculum	32	71	52	155
2	Intercultural Education	41	47	40	128
3	Advanced Study of Education in a Community	13	14	23	50
4	Docimoloy – comparative perspective	12	18	20	50
5	Quality Management in an Educational Organization	16	20	14	50
6	E-learning in Teacher Training	4	7	14	25
		118	**177**	**163**	**458**

The final grade consisted of 35% for the e-portfolios, and the rest of the grade consisted of, with the consent of the students, 15% contribution to courses and seminars (which included using eBeam Engage) and 50% in the exam. This consent between the parties (professor-students) led to the increase of their self-esteem and of their motivation to study the topics in a responsible, non-constrictive manner.

The criteria assumed by students in the format:

Table 3. Final evaluation criteria, their percentages and details

Attendance – 15%		E-portfolios – 35%		Exam -50%	
Presence	Scores	Grade	Scores	Grade	Scores
10 --------- 1.5 points		10 -------- 3.5 points		10 -------- 5 points	
9 --------- 1.35 p		9 -------- 3.15 p		9 -------- 4.5 p	
8 --------- 1.2 p		8 -------- 2.8 p		8 --------- 4 p	
7 --------- 1.05 p		7 -------- 2.45 p		7 --------- 3.5 p	
6 --------- 0.9 p		6 -------- 2.1 p		6 --------- 3 p	
5 --------- 0.75 p		5 -------- 1.75 p		5 --------- 2.5 p	
4 --------- 0.6 p		4 -------- 1.4 p		4 --------- 2 p	
3 --------- 0.45 p					
2 --------- 0.3 p					
1 --------- 0.15 p					

led to a final grade, as a sum of points obtained for each criterion, on a certain topic.

At the end of the semester, we had the following situation, as a result of this type of evaluation, the results/topic of study, grades and percentage and per all topics, sum of same grade and average value of percentage of a certain type of grade:

Tabel 4. Final grades of the students based on the 3 criteria (attendace, e-portfolios, final exam)

No.	Subject	Grade 7	Grade 8	Grade 9	Grade 10	Total
1	Theory and Methodology of Curriculum	24	32	51	48	155
		15%	21%	33%	31%	100%
2	Intercultural Education	-	47	54	27	128
			37%	42%	21%	100%
3	Advanced Study of Education in a Community	2	14	26	8	50
		4%	28%	52%	16%	100%
4	Docimoloy – comparative perspective	-	13	20	17	50
			26%	40%	34%	100%
5	Quality Management in an Educational Organization	4	12	19	15	50
		8%	24%	38%	30%	100%
6	E-learning in Teacher Training	-	-	11	14	25
				44%	56%	100%
		30	**118**	**181**	**129**	**458**
		6.55%	**25.76%**	**39.52%**	**28.17%**	**100%**

Of course that it is satisfactory both for students and professors to have such a situation, compared to the students' results in other topics where neither the interactive methods nor IT tools were used during the courses and seminars. We can state that by using computers with a proper software, the eBeam Engage smart board with its laptop, projector, audio-video system and LMS Moodle platform, the students increased their achievements in learning activities, as a result of hard work of all those implied in the process.

3. CONCLUSION

Because nowadays, youth grow in a digital world and its technological tools, we need to make important changes in our approach of the teaching methods, to include technology-based instruction, learning inducing a transformative learning, a challenge that was at the base of this study.

There is a real need for the professors to play an active role in specifying the ways in which these more and more powerful IT tools can be chosen and used in order to be harnessed in education and for the education. That is why we have decided not only to understand the usefulness of IT tools in initial teacher training, but to study the winning ways to make learning be attractive and alive for most of the students and the ways it can increase the interactivity of courses and seminars, so that it lead to transformative learning.

As *eBeam Engage* smart board, together with its associated tools, proved to be collaborative/interactive tools for data/information gathering, for content creation, for their presentation, and we used it within these parameters, we believe that all these gets us closer to the validation of their effectiveness and efficiency.

On the other hand, from our study results that the blended learning strategy, which combines f2f activities, in which using the already known interactive methods shaped according to new technologies, with e-learning activities, in which IT tools are integrated, is proper.

In this condition, we can notice that the hypothesis launched is validated, namely: the introduction in academic didactic activities of IT tools on a larger scale, by using the already known interactive methods but shaped according to new technologies, led the students' motivation towards a responsible approach of learning and transformed them in real thinker for their formation as specialists in education.

Based on the ways presented here and the students' results, we cannot but recommend the use of IT tool – in this case eBeam Engage smart board and its connected tools – in initial teacher training, and in academic didactics, in general.

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