Perceptions and Opinions of Educational Technologists Related to Educational Technology

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ABSTRACT

Perceptions related to "educational technology" have been continuously changing throughout the century. At this point, educational technology seems to be a confusing or an incomprehensible concept for most people. Perceptions of professional educational technologists in the relevant field can provide individuals who build their career in the relevant area with various perspectives. Also practices related to educational technology and relevant opinions of professionals can provide a guiding outline for the research activities being conducted in the field. This research was conducted to reveal how educational technology is perceived as a discipline, and how opinions about applications of educational technology in various countries differ. A total of 71 professionals from 12 universities in six countries participated in this research, implemented through survey method. Results support the idea that functions of the educational technology in various areas are mostly related to learning-teaching processes, and learning resources. Professional opinions on current status of the discipline reflect that there are no considerable differences related to the problems being experienced among different countries.

Keywords

Educational technology, Educational technologists, Perceptions, Opinions.

Introduction

The literature related to the educational technology embraces various definitions of the concept of educational technology, which are sometimes difficult to associate with each other. Similarly, epistomological concerns lying on the basis of definitions also vary. It is impossible to reach a proper and satisfactory definition through gathering all perception styles fostered within a century. Such efforts often disregard the conditions that foster each perception, and the uniqueness of these styles. It is crucial to have a certain internal consistency in such efforts towards unifying different perception styles which have a philosophical unity in themselves.

Responses given to the question "what is educational technology" have changed significantly within time (Seels & Richey, 1994). A chronological review of these definitions is important in the sense of revealing the perception styles which are parallel to the understandings we have had at a certain point of time.

The commencement of systematic studies in the area of educational technology does not even date back to the nineteenth century. First studies related to the educational technology have started at the beginning of the twentieth century, with the pressure of industrial technology, regardless of educational sciences and studies of educators. Concept of "visual education", emerged with industrial technology, may be regarded as the starting point of the fostering of educational technology as a specialization (Simsek, 1998).

Early 1900s were the years when the school museums were newly established, silent movies were produced, and professional production and organization were experienced in visual communication industry. With the impact of "visual education" that the technology industry had developed and tried expand this toward those schools within its market profile, establishment of "visual education offices" in the schools was another important development experienced in this period of time (Percival & Ellington, 1988).

As seen in the definition given by Dorris, in those years, the concept of visual instruction was an expression for the statement "...the enrichment of education through the 'seeing experience.' It involves the use of all types of visual aids such as the excursion, flat pictures, models, exhibits, charts, maps, graphs, stereographs, stereopticion slides, and motion pictures." (cited in Reiser & Ely, 1997, p.64).

Focus of perception for educational technology was also expanded towards the 1930s, with the impact of technological developments such as audio recordings, radio and movies. Having been unified with audio

technologies, the concept of visual education was turned into "audio-visual education". This focusing continued until early 1950s with the support of communication theorists as Shannon and Weaver. In this period, the focus of educational technology was mostly on audio-visual environments. At that period of time, what was understood from the concept of educational technology which was expanded dimensionally but remained the same in terms of quality was audio-visual environments and the use of these environments to support educational objectives.

Just right after the World War II, in the industry sector discussions has started about commercial implications with regard to which communication environments might best respond to the expectations towards the educational technology. The focus of these discussions then turned to the educational functions of communication environments. Many applauded an understanding, represented by the psychological and educational parties reacting to this discussion, stating that messages controlling the environments were more important than the environments themselves. Ideas stated by Dale and other theorists who thought in the same way continued to have their impact for some time (Simsek, 1998).

At that time, Finn and Lumsdaine emphasized the fact that educational technology was an approach towards the problems of education beyond all discussions. They pointed out that the educational technology, in fact, had a basic function of applying scientific information and processes onto the problems of education. It has been known that the educational technology was defined as "... a way of looking at instructional problems and examining feasible solutions to those problems." by Finn, and as "... the application of science to instructional practices" by Lumsdaine (cited in Reiser & Ely, 1997, p.66).

The literature review has shown that what was understood from the concept of educational technology until that time was mostly related to the concepts of tools, materials and messages. Many people who focused their studies on details of teaching-learning processes pointed out that there were many more things to be developed in education. This led to a more comprehensive interpretation as "the technology of education", which was far beyond the concept of "technology in education". This interpretation caused a shift in the focus to a system consisting of every single thing which is supposed to be effective in learning and instruction, including hardware and software of educational technology (Percival & Ellington, 1988).
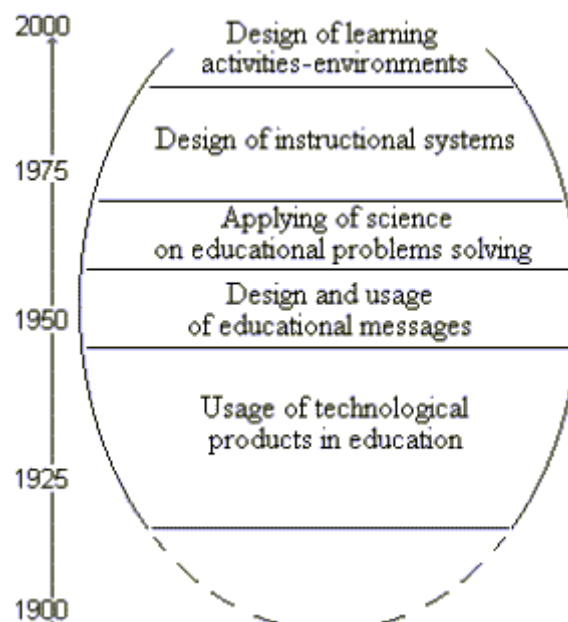

Figure 1. Perceptional changes on educational technology

Until late 1970s, the educational technology was associated with significantly different perceptions. Almost none of the perception could be rejected; on the contrary, "cumulative definitions" were obtained through adding those focuses to one another. This led to several statements as a "product", "process", "an approach", "communication revolution", "means of communication", "an instructional design", etc.

Nevertheless, no significant, limited and agreed definition of educational technology was put forward as to what educational technology was. This period of time could be considered as a period when the word "as" in English was most commonly used up with the definitions of educational technology.

This period has given an impression of trying to overcome a confusion through defining the educational technology as "none but all of them." Nearly, all the definitions have been accepted as both true and false. Thus, an atmosphere of agreement has been created, being not so pretentious and open to reactions and criticisms. Until that time, definitions of educational technology have mostly based on industrial technology, behaviourism, systems approach, and cognitive psychology.

In recent periods, functions and methodology of educational technology have been changed by the constructivism, which is based on both cognitive psychology and interpretative philosophy. Constructivist educational paradigm has caused perceptions related to the educational technology to focus on learning, student, and learning environment (Simsek, 1998). It may be claimed that this approach has led to a narrow-down in the scope of perceptions of educational technology, but also to a deepening and flexibility in applications.

In their book titled Distance Education: A Systems View (2nd Edition), Moore & Kearsley (2005) investigated the changes in the educational technology in their effects on distance education. Their findings revealed that changes in the perceptions related to educational technology were not just a chronological phenomenon. This perceptional shift caused a change not only in the concepts used, but also in many other things such as expectations related to technology and media, approaches to the course design and development, and roles of teacher and instructors.

Each of these different perceptions has induced different definitions of educational technology. Today, the fact that current definitions of education technology have an ambiguity and non-discriminating constitutes a major problem. It is difficult to find out responses that cover the following questions through a retrospective review of all these definitions which were gathered in the literature: If all these things comprise educational technology, what is not educational technology? Or if all these things are far from describing the educational technology, what is educational technology?

In his book titled 'The Concept of Educational Technology', Richmond (1970) included a large section to the definitions related to technology and educational technology. Definitions compiled from literature and included in the book mentioned above displayed that educational technology could be perceived in various ways and hardware dimension was considerably emphasized.

Research conducted by Johnson (1995) revealed that qualitative and quantitative aspects of the graduate education have shown a heterogeneous structure. Title of programmes and courses, number of instructors, and technological equipments have a wide variety from country to country or university to university.

Plotnick (1996) performed a content analysis reviewing articles in professional journals, doctoral dissertations, ERIC documents in order to define trends in the field of educational technology. The findings of these analyses can be summarized as follows: Computerization in schools became common for almost all students, computer networks became one of the applications of educational technology developed rapidly and benefiting from television became universally. Technology use in education became the focus of political discussions. Accessibility rates to educational technology applications from houses increased. Developments in delivery technologies were too rapid. Insistence in the direction of being technologically literate for teachers became strong gradually. Applications of educational technology become an important and effective means that launched educational reform.

Studies of Hoffman & Ritchie (1997) stated that educational technologists could find job opportunities in schools, companies, army, and professional organizations. The responsibilities that are going to be carried and products that are going to be developed by educational technologists can vary regarding the service areas and sizes of organizations in which the educational technologists are employed. Generally, educational technologists work in the processes of analyses, design, development, application, evaluation and project management.

Chronological reviews of Reiser & Ely (1997) showed that the meanings assigned to the concept of educational technology displayed significant changes within the course of time. Change in the direction of media-material-message-system-process in perceptional focuses related to educational technology caused a change in the expectations toward the educational technologists. Expectations considering the issues of providing benefits of instruments at the beginning change in the direction of organization and management today. The instruments

used in order to fulfill these functions changed in a direction regarding media-message-source-process. Moreover, the objectives foreseen for educational technology changed from visualization of instruction into performance development.

Caffarella (1999) displayed trends in the field of educational technology by analyzing doctoral dissertations related to educational technology. This study revealed that specific subjects were more popular than the others in specific periods and various changes occured in the methodologies utilized as well. It was observed that media researches were significantly dominant in the studies reviewed.

As it can be seen from the studies mentioned above, current studies related to the aspects of educational technology are generally based on literature review and document analyses. There is a need for an international perspective based on the views of the professionals in the relevant subject areas. Four continents which are categorized according to their development levels in the relevant area and the views of educational technologists employed in six countries were included in this research. These professionals were asked how they perceive educational technology and how they evaluate the applications in their homelands.

Professionals in the field of educational technology do not work merely in the jobs in their homelands as it was, also they carry on their studies as researcher and practitioner. Findings related to the perception and application of educational technology in various countries can provide professionals with significant insights to consider the current status in various countries and this can make their adaptation process easier.

Educational technology is a field that develops rapidly. Within rapid development process, findings related to the issue of associating the field of educational technology with specific subject areas in international area can provide various perspectives to those who are performing their careers in the field of educational technology.

Significant variety related to the perception of educational technology is a point which is emphasized frequently in the relevant literature. The definition of this field, goals, research methods and applications related to international status provide criteria in order to establish a standard and to compare their perceptions and current status in their homelands.

Research Questions

The main aim of this research is to define how the educational technologists perceive the educational technology as a discipline and how they evaluate educational technology applications in their homeland. Within the scope of this main aim, answers to the following questions have been sought:
1. What are the profiles of educational technologists included in this research considering the issues of their academic title, position, educational background, the sources and languages they utilized in literature review?
2. What are the work areas of educational technologists within the educational technology?
3. What are the perceptions of educational technologists related to definition, goals, products, scopes and method of educational technology as a discipline?
4. What are the opinions of educational technologists related to the applications of educational technology in their homelands?
5. Do the perceptions and opinions of educational technologists vary regarding the development level of countries?

Method

The research was conducted within a frame of general survey model and questionnaires. The questionnaire was administered in order to determine both perceptions of the professionals related the educational technology and their opinions regarding the current applications in their countries.

Participants

A total of 71 professionals participated in the research. Table 1 gives the distribution of the participants according to their countries and universities at which they work. Every participant has at least a PhD or EdD

degree in educational technology. By the time of this research, these individuals have been assigned for various tasks in the educational technology doctoral programme in their universities.

Table 1. Countries, universities and number of participants

COUNTRY	UNIVERSITY	N
U.S.A.	St.Cloud State University	14
	Kent State University	09
	Grambling State University	04
Canada	Concordia University	05
	Memorial University of Newfoundland	05
	University of Calgary	02
Turkey	Ankara University	05
	Anadolu University	05
Indonesia	IKIP Malang Graduate School	07
	IKIP Jakarta Graduate School	06
Nigeria	Obasemi Awolowo University	03
Poland	Adam Mickievicz University	06
TOTAL		71

Instrument

Data collection instrument which was prepared in English consists of 48 questions in total, 8 of which are on demographic questions, 16 questions on their perceptions of educational technology (Cronbach alpha is 0.76), and 24 questions on the current status of the applications in the area (Cronbach alpha is 0.79). 5-point Likert scale is used for all questions except demographic questions.

The draft of the questionnaire was prepared based on the relevant literature and developed with the contributions of the international professionals from various countries, and in the year 2000 pilot study of the questionnaire was conducted with the participation of 34 professionals who were not included in this research. Reliability of the questionnaire was calculated through Cronbach Alpha and the value of 0.80 was obtained.

Procedures

Various web resources and the study of Johnson (1995) were utilized in the determining the countries and universities to be included in the scope of this research.

The countries having doctoral programmes in the field of educational technology were classified according to their developmental level as underdeveloped (countries with one programme), developing (countries with two programmes) and developed (countries with more than two programmes). The USA and Canada were directly selected as developed countries (no data were obtained whether there were other countries in this category), Turkey and Indonesia were randomly selected as developing countries, and Poland and Nigeria were randomly selected as underdeveloped countries.

For USA, it was necessary to take a sample due to the high number of the doctoral programmes, whereas in other countries all universities having a doctoral program were included in the research. All numerical information regarding the programs in the USA was grouped, and the universities were classified as developed, developing and underdeveloped "in the circumstances of the USA" based on the quality of their programmes and their facilities. One university among groups was included in the scope of this research. In the data analysis, this classification within the universities of the USA was not considered. This grouping was only used for representativeness of the universities with different development levels in the USA. Comparisons were made among the countries, not universities.

The questionnaires were sent through electronic mail between November 2000 and March 2001. 71 of 97 questionnaires returned back. This number constitutes approximately 73% of the questionnaires sent to professionals.

Data analysis

Primarily, frequencies (f), percentages (%) and average means (M) were calculated for the collected data. In determining the approval status of the questionnaire items, agreement levels stated by professionals for each item were taken as basis. Those items with an average agreement level of 2.59 or below were considered "rejected," those with an average agreement level of 2.60–3.39 were neither rejected nor approved or "not-approved," and those with an average agreement level of 3.40 or above were considered as "approved."

The only independent variable used for comparison of agreement level averages was the developmental level of the countries on the relevant area. F values obtained from ANOVA test in the tables were calculated based on this variable. Single group t-test was used to determine whether there was a difference between the agreement levels of two items.

Results

Profile of the participants

Among the professionals participated in the research, the developed countries were represented with 39 participants (55%), developing countries with 23 participants (32%) and underdeveloped countries with 9 participants (13%). The number and the percentages of the participants were as follows respectively; 29 full professors (41%), 16 associate professors (23%), 13 assistant professors (18%) and 13 other (18%).

Table 2. Descriptive statistics related to the participants

ITEMS		CHOICES	f	%
01.Countries		Developed	39	55
		Developing	23	32
		Underdeveloped	9	13
02.Academic title		Prof.	29	41
		Assoc.Prof.	16	23
		Asst.Prof.	13	18
		Other	13	18
03.Department			- -	- -
04.Position		Academician	63	89
		Manager/Expert	8	11
05.Degrees and fields	Undergraduate	Educational Tech.	6	8
		Education	41	58
		Other	24	34
	Graduate	Educational Tech.	24	34
		Education	27	38
		Other	20	28
	Doctorate	Educational Tech.	71	100
		Education	0	0
		Other	0	0
06.Work areas in educational tech.			- -	- -
07.Literature sources (more than one)		Online	43	61
		Article	71	100
		Book	71	100
		Report	71	100
		Daily newspaper	17	24
		Other	32	45
08.Languages (more than one)		Second	71	100
		Third	15	21
		Fourth	7	10
		More than	2	3

N= 71

63 of the participants (89%) are academicians, while 8 of the participants (11%) are those who work as managers or technical staff. All of the participants obtained their PhD level in the field of educational technology. The number of the participants who obtained their undergraduate and graduate degree in educational technology were 24 (34%) and 6 (8%), respectively. The participants who obtained their graduate (f=27; 38%) and undergraduate (f=41; 58%) degrees on education were forming the largest group and those who obtained their graduate (f=24; 34%) and undergraduate (f=20; 28%) degrees on the other fields were forming the second group.

All participants stated that they followed the developments in the field by books, articles, and reports. The number and percentage of the participants using other resources were as follows respectively; 43 (61%) using online resources, 17 (24%) using daily newspaper and 32 (45%) using other resources. All of the participants stated that they knew one foreign language beside their mother languages. 15 (21%) of the participants stated that they knew 3 languages, 7 (10%) of them 4 languages and 2 of them stated that they knew more than 4 languages to follow the relevant literature.

Work Areas in the Field of Educational Technology

Participants used totally 43 different terms to express their work areas within educational technology. The amount of the special work areas accepted within the field is significant. The concepts used by the participants covered a wide spectrum ranging from cybernetics to philosophy. Table 3 provides a complete list of terms used to define special work areas along with their frequency of use.

Table 3. Work areas of participants

CONTEXT	f	CONTEXT	f
Computer aided instruction/learning	9	Adult learning	1
		Work areas literacy	
Audio-visual instruction/media	5	Computer assisted design	
Media management		Computer applications	
Radio-television production		Individual instruction	
		Multicultural education	
Information technologies	4	Education otomation	
Library media		Educational planing	
Instructional measurement/evaluation		Technology in education	
Data processing/statistics		Halography	
		Educational needs	
Open learning	3	Informatic /telematic	
Interactive video/media		Mathematics education	
Instructional design		Message design	
		Learning environment	
Research methods	2	Instructional management	
Sensorial learning		Curriculum development	
Learning/instruction theory		Curriculum & Instruction	
Educational psychology		Sybernetic	
Graphical materials		Philosophy of technology	
Collection development		History education	
Online services/communication			
Learning sources			
Learning strategies			
Instructional systems			
System analyse			
Number of concept = 43		Σf = 92	

Primarily, it is seen that special work areas related to educational technology quite vary. It is also seen that educational technology has an accumulation and functionality usable in many areas related with education. Such a perspective attracts the attention to the necessity and possibility to cooperate with educational technology or educational technologists in most of the educational practices or in work areas within educational sciences. Similarly, it is understood that educational technologists should consider a wide spectrum of problems as their areas of study.

Definition of Educational Technology

In this study, definitions of educational technology were compiled from the literature and participants were asked how much they agree with these definitions. The participants agreed on that educational technology covered both use of technological products in education and production of learning environments processes (M=4.51), that educational technology covered overall instructional design processes (M=3.97), and that educational technology was a work area related to have students reach to the objectives of instructional programs (M=3.64). Despite, the participants rejected the expression that the concept of educational technology defined the technological products used for educational services (M=1.88). Participants neither rejected nor approved the definition that educational technology was not identical to science (M=3.05). The results of F test, based on the development level of countries in the area, showed no significant results for none of the five definitions.

This finding shows that opinions related to the definition of educational technology did not change according to the development level of countries, and that the opinions within the literature are mostly shared. The findings obtained show that a definition like "… a research and practice discipline related to development and use of learning-teaching processes and environments" is a definition to be shared at international platforms. It is clear that "development and use" cover such sub-processes as design, application, evaluation, selection, improvement and problem solving.

The existence of a reaction toward associating the educational technology with technological products in general terms is also prominent. Despite this, it is possible to say that associating the area with the concept of "science" is open to discussion. From the science and technology philosophy perspective, although the behaviour of those professionals associating these two concepts is seen as a dilemma, the basis of these opinions may be the continuous expansion of method share between science and technology as a result of the deepening relationships between these two areas.

The professionals reacting to association of science and educational technology might have considered the obligation of those methods and tools not tested scientifically, and the impossibility of the use of scientific testing processes in solving practical problems all the time.

Goal of Educational Technology

The professionals approved the expression that the goal of educational technology was to support learning of the student (M=4.59). In the same way, improving the effectiveness of the instruction was also approved as a basic goal of educational technology, along with the productivity of the resources used (M=4.15). Application of theoretical knowledge related to learning and teaching into practice (M=3.99) and supporting the instructor (M=3.85) were also stated among the basic goals of educational technology. Results of the F test applied based on the development level of countries in the area were not significant for any of the goals expressed.

These findings, despite different agreement averages, showed that all of the expressions regarding the possible goals of educational technology were approved by the participants and approval level was not dependent upon the developmental level of countries. Departing from these findings, goals foreseen for educational technology may be summarized as follows: supporting learning, improving effectiveness and productivity of learning-teaching and of the resources used in these processes, transforming relevant theoretical information into practice, and supporting the instructor.

In order to enlighten the discussion, observed from time to time, on determining the priority of the function of supporting learning or teaching, single group t test was used to analyze the difference among agreement averages for the relevant items. The value obtained (t=2.762) was found as significant. This finding showed that, with an approach appreciating learning and student, "support to learning and student" function of the educational technology (M=4.59) was more emphasized than "support to teaching and instructor" function (M=3.85).

Product of Educational Technology

Explanations related to the concrete products of studies of educational technology were summarized with three items in the data collection instrument. Among, all items except that "... techniques, strategy, methodology and environments with regard to learning-teaching processes" (M=3.85) were neither approved nor rejected. F value calculated for the approved expression based on the development level of the countries (9.785) showed that

agreement averages for this item was higher in underdeveloped countries (M=4.86) compared to developing countries (M=3.42). Differences among agreement averages for other items were not significant.

Table 4. Perceptions related to educational technology

STATEMENT	M	F	p
09. Educational technology is a discipline in which research on the ways of making students reach out towards the private objectives of curriculum are conducted.	3.64	4,222	,377
10. Educational technology means designing, applying, evolving and improving the whole learning-teaching processes.	3.97	6,073	,194
11. Educational technology means using technological products in educational practices, designing of learning-teaching aids and improving them.	4.51	11,313	,185
12. Educational technology is a general name for all kinds of technological products which are used in education.	1.88	6,750	,345
13. Although it often uses scientific methods, educational technology itself is not mere science.	3.05	5,806	,445
17. The goal of educational technology is to optimize both effectiveness of learning-teaching processes and productivity of all kinds of the sources which are used in these processes.	4.15	2,917	,233
18. The goal of educational technology is to convert theoretical knowledge related with learning and teaching to systematic practices.	3.99	,049	,976
19. The goal of educational technology is to help the teacher in teaching.	3.85	,729	,994
20. The goal of educational technology is to help the students in learning.	4.59	,049	,976
14. Product of educational technology are students who graduated from curriculums.	3.00	8,536	,074
15. Product of educational technology is techniques, strategies, processes and media that are related with learning-teaching processes.	3.85	9,785*	,044
16. Although educational technology is based on the theoretical foundations, it also produce concrete products.	3.14	5,479	,705
23. Educational technology includes all aspects of the education unconditionally.	3.32	,729	,948
24. Educational technology, whose main working area is limited with learning-teaching process and media, concerns with the other aspects of education in order to fulfill its functions in these two areas.	3.51	1,056	,901
21. The most convenient research methods for the nature of educational technology is experiment and R&D.	3.71	4,222	,377
22. When the existent scientific knowledge and processes are inadequate, educational technology can utilize emprical findings and methods to support itself.	3.64	6,073	,194

Non-approval of the idea of graduates of programmes (classical system and input-output approach) as products of educational technology (M=3.00) showed that this idea lost its popularity, whereas its non-rejection showed that it was not abandoned totally.

Non-approval of the expression that educational technology took the science as its basis, however it was directly towards practice and product rather than theoretical information production like science (M=3.14), might be caused by contribution of technology to science and by interpretation of science as a relative flexible concept. Non-rejection of this expression, then, might be caused by paying importance to the product-related side of educational technology.

Scope of Educational Technology

The statement that educational technology covered all aspects of education was neither approved nor rejected by the professionals (M=3.32). Professionals approved the statement sensitive to the separation between the studying area and interest area of educational technology (M=3.51). F values, calculated based on development level of countries, for both items were not significant.

These findings are also consistent with the results related to the definition, goal, and product of educational technology. Departing from these findings, it is possible to say that educational technology has a function of

producing and solving problem with regard to learning-teaching process and environments; however, it deals with all relevant aspects to solve the problems in this area. In other words, the major work area of educational technology is instructional processes and environments, and all other aspects are areas of interest. It is necessary to be responsible for considering important and benefiting from those developments in the relevant areas of educational technology, and for making production in areas of interest.

Method of Educational Technology

Are there any problem-solving or knowledge/product development methods more appropriate to the nature of educational technology than the other methods? There were two separate expressions in the data collection instrument related with this question. Professionals approved the opinion that the most appropriate research approach for educational technology was research and development (M=3.71). Professionals also approved the statement, which took the relationship between educational technology, science and scientific methodology as basis, that educational technology was dependent upon scientific methodology, but independent when it was insufficient (M=3.64). Results of the F test for agreement level averages were not significant for both statements related with valid production and research methods in the area.

It is considered that there is no dilemma between non-rejection of the item stating that educational technology is not identical with science and approval of the item "educational technology may apply for empirical information and methodologies in the case of insufficiency of the existing scientific information and methodologies." Main thing in the area is scientific methodology was approved, however, educational technology has the responsibility to solve problems in the case of insufficiency of scientific testing and controlling methods, and it may make use of trial-and-error type of methods when needed.

Current Status of Educational Technology Applications

Data collection instrument included 24 items for the professionals to evaluate the general situation of educational technology in their own countries. It was aimed to determine the trends and problems experienced in different countries through participation level in these items. Generally, none of the items given in Table 5 was rejected. However, the expression was not approved neither.

First of the items neither rejected nor approved was the expression numbered 31 stating that experimental designs were neglected in scientific researches in the area of educational technology. Average participation level to this item is 3.11 and F value is 2.264, which is not significant. Non-rejection of this item may either be considered not to accept the incapacity of the experimental researches, or not to consider to use of one of the research design more frequently than the other one. The fact that this item was not rejected completely by the participants may indicate that such a problem is considered important by some professionals.

The situation is the same for the item numbered 33 expressing that scientific information related to human learning is not adequately considered in the practice (M=3.14). F value (2.182) for this item is not significant. Non-rejection of the item confirms the existence of the problems expressed, whereas non-approval of it verifies that the problem is not widespread enough to attract the attention.

Another item neither rejected nor approved is "Academic studies regarding the instructional design do not go beyond keeping and improving the control over the instructional process" (M=3.14). F value (11.063) for this item is not significant, either. Non-rejection of this item may be caused by the opinion of professionals that the studies related to the instructional design are under the dominance of behaviourist and cognitive approaches in practice. As known, these two approaches have a structure paying more attention to controlling the learning processes. Non-approval of the item may be caused by the fact that professionals consider those approaches and practical examples not having such features.

Calculated F values were not significant for the approved 21 items, except for 2 items. The professionals approved the claim that educational technology practices are generally implemented through a single dimension, and systematics is generally disregarded (M=4.00). F value for this item (7.969) is significant, providing clues towards the fact that the problem concerned is experienced much by the developing countries. This finding may be interpreted in such a way that, in these countries there exists a knowledge background to recognize the problem mentioned, but the resources and policies are not sufficient to prevent or overcome it. It is not unexpected to have less such problems in developed countries.

3.75 is the mean for agreement level with the item expressing that educational technology applications are mostly based on behaviourist instructional approach. This mean is 3.21 in developed countries, 3.85 for developing countries, and 4.19 for underdeveloped countries. F value for this item (1.079) is significant in favour of developed countries. This may be associated with strong trend for demanding for innovative approaches in developed countries.

Table 5. Opinions related to educational technology applications

STATEMENT	M	F	p
25. Perceptual variety about educational technology prevents the prominency of definite nature of the area.	4,14	5,260	,511
26. Educational technology is usually perceived with its limited aspect.	4,57	2,431	,297
27. Educational technology's location and function among the other educational sciences are not distinctive enough.	4,28	5,000	,287
28. Practices related with educational technology are generally one dimensional and necessity of being comprehensive and systematic is ignored in these practices.	4,00	8,969	,043
29. Researchs in educational technology are more interested in producing theoretical knowledge than improving concrete products.	3,42	5,313	,504
30. Educational technologists do not deal with the educational problems due to the results of practices sufficiently.	3,71	7,958	,241
31. Althought survey method is mostly overestimated in researches, there is no adequate concern to experimental design in educational technology.	3,11	2,264	,687
32. Educational technologists are not interested in individualisation of instruction as having students' accomplishments enhanced.	4,14	5,500	,240
33. Scientific knowledge concerning human learning is not considered enough in practices of educational technology.	3,14	2,812	,832
34. The efforts a in order to utilize the opinions provided in practices of instruction by different learning theories are no adequate.	4,00	3,792	,435
35. Current applications in educational technology are usually based on behaviourism.	3,75	4,079	,038
36. The transfer of the process models that are alternative to the teacher based instruction to application in too inadequate.	4,14	1,260	,868
37. The academical studies about instructional design hand by go beyond the attempt to maintain and increase the control over instructional process.	3,14	11,063	,026
38. Responsibility of educational technology for improving current instruction models is not usualy taken into consideration.	3,42	5,397	,494
39. Developments in the dimension of instructional design in educational technology can not support curriculum as much as the developments in media dimension.	4,28	4,240	,375
40. Developments in the field of instruction are not considered enough in practices concerning with the usage of educational media and its design.	4,14	3,111	,539
41. Developments in media aspect of educational technology generally seem to supply employing more educational products in schools.	4,28	3,281	,512
42. Appropriateness to expectations and conditions of media used in schools is not regarded as much as the technological newness of media itself.	4,57	,219	,896
43. Usage of new technologies in schools is controlled by people like manager, computer engineers and salesmen instead of educational technologists and educators.	4,71	2,100	,350
44. Usage of new technology in schools can not have reduced intense addiction to teachers as much as it is desired.	4,57	,899	,638
45. Generally, knowledge of educational technology is identified with recognising and using new technological products.	4,28	2,917	,233
46. Educational expectations inclining towards new technologies are generally exaggerated and they are not supplied adequately.	4,28	2,917	,233
47. Esthetic requirements for human in using new technology can not be supplied sufficiently in schools.	4,00	7,139	,308
48. In the existing conditions, the requirement of face-to-face interaction in the using new technologies in education is generally disregarded.	3,71	5,260	,511

Discussion

Application of problem-solving and production approach of technology on education has a hundred-year-old history as a work area. The general name of this work area is educational technology. Generally, with an influence caused by widespread nature of technology, educational technology is the concern of everybody related with education. The more this number of people interested in educational technology increases, the more varied are the perceptions towards this area. Today, there exists a variety of perceptions and definitions on subjects, including what educational technology is, what it deals with, what it contributes to, and what it covers. The variety of these perceptions is not a problem in itself. Nevertheless, these perceptions also determine the expectations toward educational technology and direct the applications concerned.

The findings of this research provide clues to determine the source of this perceptional scatter. For instance, the number of concepts used by the participants to name their own area of work within the educational technology is so many that it is difficult to develop a complete definition sensitive to all concepts used. However, it is an important issue that those individuals defining themselves as educational technologists fulfill similar tasks in those various areas defined by concepts. For instance, in the context of technology concept, what may be the common function of "local history" and "library science?" Within the same context, what is the common point of "TV production" and multi-culture?" Findings of the research have shown that the common point shared by these areas focused on product, process and problem solving for improving the efficiency and productivity of learning-teaching processes.

The variety of areas within the educational technology is not an issue blurring the things it is dealing with; on the contrary, it shows that the products, solutions and systems developed by the educational technology may be used in a variety of areas, for reaching to the same aims. A simple illustration may be the existence of hundreds of languages throughout the world. However, whatever the language(s) s/he uses, a person whose profession is to interpret from one language to another is called interpreter. The variety of languages they use does not mean that what the interpreters do is indefinite; they do interpretation.

The participants, regardless of their countries, definitely rejected the idea that educational technology is identical with technological products used in education. This, in fact, was an expected finding. As can be seen in the literature also, this idea has emerged as a product of industrial technology at the beginning of the twentieth century, but abandoned towards the second half of the previous century.

Thoughts and perceptions which professionals feel difficult to agree on are generally related with such issues as whether educational technology may be associated with "science" concept, whether educational technology has a function of information production, what the parameters limiting the interest areas are, whether a priority can be set about the research patterns, and which concrete objectives should the researches have. It is neither possible nor necessary to reach a certain compromise about these issues, since it is not possible to limit the viewpoints related to learning, technology or the educational function of technology.

Professionals' assessments for the existing status in the area imply that problems of various countries do not vary in nature. It is considered that almost every country experiences problems such as the disseminated nature of the perceptional variety of the area, the imperfect use of at-site knowledge for applications, functional uncertainty, incapacity in the dimension of product development, and low speed of academic development in the area.

Implications

The terms used by the participants in order to define their work areas display significant variety than expected. The terms used can indicate the research areas in the field of educational technology for the future. The terms mentioned above provide the researchers with various perspectives. Researches that will be conducted in the future could be suggested to focus to the areas defined by these terms.

What do the terms used by the participants inherently include? In which contexts these terms are used in relation to educational technology? These are the key questions. The analytical studies related to these questions can provide more satisfactory and guiding findings. It is suggested that further studies should be in this type.

Educational technologists agree on the issue of educational technology is not a general name of all kind of technological products which are used in education. This agreement can be seen as a reaction to perception of educational technology just as a product. However, as long as the researches and applications on educational

technology focus on media and material, it is difficult to consider that the other aspects of educational technology attract attention of the people. Further studies are suggested to focus to subject areas other than media and material which are the two subjects that are examined frequently in studies on educational technologies. Among the subject areas are cross-cultural comparison studies related to educational technologies applications, factors affecting achievement of education technology applications, applications of educational technology in different settings, and computer-mediated instructional design, etc.

Participants agree that the academical studies related to instructional design do not go beyond the effort of maintaining and increasing the control on learning. These opinions are the guidelines for objectives of the further educational technology researches. Considering this issue, the research and applications related to educational technology should go beyond the narrow framework of traditional educational paradigms. Studies related to this issue have an importance in that they provide a test opportunity for new education paradigms.

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