



**Murdoch**  
UNIVERSITY

**MURDOCH RESEARCH REPOSITORY**

<http://researchrepository.murdoch.edu.au>

*This is the author's final version of the work, as accepted for publication following peer review but without the publisher's layout or pagination.*

**Peterson, R., Herrington, J. , Konza, D., Tzvetkova-Arsova, M. and Stefanova, K. (2008) Assisting Bulgarian special educators with competency development online. Campus-Wide Information Systems, 25 (4). pp. 197-208.**

<http://researchrepository.murdoch.edu.au/5234>

Copyright © 2008 Authors  
It is posted here for your personal use. No further distribution is permitted.

## **Assisting Bulgarian special educators with competency development online**

### **Abstract**

**Purpose** – This paper discusses an expansion of the Special Education Bulgaria (SEB) internet community that is required to pilot software created by the European Union's (EU's) 6th Framework integrated project, TENCompetence.

**Design/methodology/approach** – SEB is the product of a two-year research project designed to create a sustainable nation-wide community of practice (CoP) for special education in Bulgaria via the Internet. This paper discusses the SEB features consistent with TENCompetence concepts of competency development, lifelong learning, and professional networking. It then describes the additional features needed to prepare a SEB pilot.

**Findings** – SEB was developed throughout three phases of research, which included a needs assessment, formative evaluation, and effectiveness evaluation. Effectiveness evaluation results indicated that though a CoP has begun to coalesce, it remains unclear to what extent SEB helps special educators do their jobs better. In response to this finding, the implementation and testing of e-portfolios and online courses is proposed. The implementation would employ Moodle for course management, Elgg or Mahara for e-portfolios, and TENCompetence open-source software for defining and organizing competencies.

**Research limitations/implications** – Research outcomes regarding online communities and lifelong competency development may also apply to the professional development of special educators in neighbouring Balkan countries, especially those new to or soon to enter the EU.

**Originality/value** – Internet-based competency development and lifelong learning for special educators in Bulgaria, one of the EU's newest member countries, is investigated.

**Keywords** – Competence development, Special education, Bulgaria, Community of practice, E-portfolio, E-learning

**Paper type** – Research paper

### **1. Introduction**

It is often assumed “that learning is an individual process, that it has a beginning and an end, that it is best separated from the rest of our activities, and that it is the result of teaching” (Wenger, 1999, p. 3). It has also been argued, however, that learning is a social phenomenon resulting from regular interaction with others throughout our daily lives. Based largely on this argument, Lave and Wenger (1991) proposed a social learning model that involved habitual interaction with what they termed a *community of practice* (CoP) (Smith, 2006). “Communities of practice are groups of people who share a concern, a set of problems,

or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger et al., 2002, p. 4). Professionals that regularly meet for lunch to discuss their jobs are part of a CoP. The parents of children involved in a sport, who advise each other about parenting, are also part of a CoP. Similarly, with regard to special education in Bulgaria, CoPs already exist. Some are challenged geographically by distance and regional boundaries and others have the potential to form but do not because of the requirements of daily living or separation across cities.

*Special Education Bulgaria* (SEB) is a CoP for special education researchers, practitioners, teachers in training, and parents. It is facilitated by a website. SEB’s central purpose is to connect extant geographically-dispersed special education communities in Bulgaria. The website, [www.specialeducationbulgaria.com](http://www.specialeducationbulgaria.com), has been updated progressively throughout three phases of research (see Figure 1). The design-based research approach has guided each phase (Brown, 1992; Collins, 1992; Design-Based Research Collective, 2003; Peterson & Herrington, 2005; Reeves et al., 2005; van den Akker, 1999). Theoretical underpinnings originate from the CoP concept but more specifically relate to the *distributed community of practice* (DCoP) concept described by Wenger et al. (2002).

When the SEB project began in 2005, it was not known if the development of a DCoP facilitated by the Internet would be feasible to establish in Bulgaria. Results from the first two phases of research, however, indicated that it was not only possible, there was a great deal of interest. The website has grown from an initial group of 20 users to more than 300. Further, it appears that this is just the type of project that the European Union (EU) is interested in pursuing (Bulgarian National Assembly, 2001; Commission of the European communities, 2005; Koper & Stefanov, 2006).

Preliminary results from the third and final research phase, however, indicate that a DCoP alone may not meet the needs of Bulgaria’s special education community. Though the SEB website appears to facilitate community building, it remains unclear if it significantly helps special educators do their jobs better. To address this finding, SEB has looked to the EU’s 6<sup>th</sup> Framework integrated project, TENCompetence<sup>1</sup>. It is anticipated that the success of a TENCompetence-SEB partnership will depend primarily on the implementation and testing of *e-portfolios* and *online courses* to assist special education professionals with lifelong competency development. This paper briefly summarizes the SEB features consistent with TENCompetence concepts of competency development, lifelong learning, and professional networking. It then describes, in detail, the features needed to expand SEB from a DCoP into

---

<sup>1</sup> TENCompetence seeks to research and develop innovative methods and technologies for lifelong learning and competency tracking, development, and assessment that will be applicable to a wide range, if not all, professions in the EU (see Figure 2).

a suitable TENCompetence pilot. It concludes with a discussion of the benefits of a TENCompetence-SEB partnership.

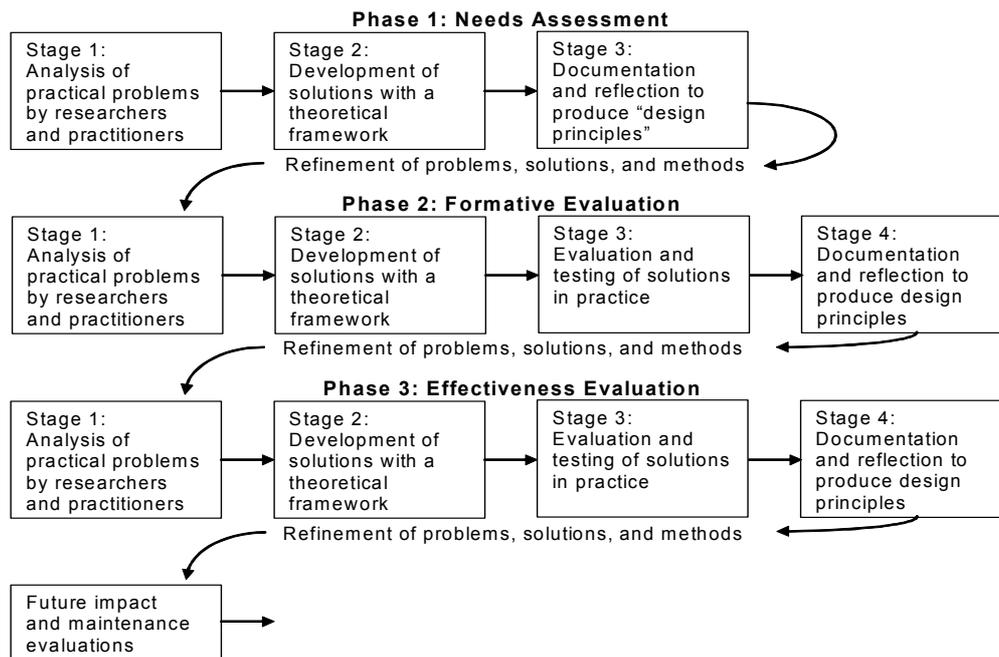


Figure 1: Design-based research phases based on Reeves's *development research* diagram (2000, p. 25) and Reeves and Hedberg's methods for interactive learning systems evaluation (2003)

## 2. New objectives

SEB project objectives correlate closely with several of the TENCompetence objectives (see Figure 2). The website provides discussion forums; chat rooms; document, photo, and links repositories; online voting; RSS news feeds; calendar and other tools and meets all of the necessary DCoP criteria laid out by Preece (2000) and Wenger et al. (2002) including, among others, ease of navigation and quick, secure access. What appears to be missing, however, is a direct link to standardized competencies and ways of developing such competencies. Hence, to better address all four TENCompetence core objectives, SEB will host online courses to teach and assess special education competencies and e-portfolios for substantiating such competencies. The next two sections of this paper explain how online courses and e-portfolios will be integrated.

## 3. Online courses

The SEB Internet community is powered by a dependable course management system, Moodle<sup>2</sup>, that is widely praised for its ability to host online courses. To date, however, only the social networking, "learning community," aspects of Moodle have been employed by SEB (Dougiamas & Taylor, 2003). The following section discusses the competencies to be targeted

<sup>2</sup> Moodle is an open-source course management system that was created in 1999 by Martin Dougiamas during his PhD candidature at Curtin University of Technology in Perth, Western Australia. It has since evolved substantially and is available for use in more than 50 languages, including Bulgarian (Moodle community, n.d.).

by SEB and how online courses will be integrated to better address TENCompetence objective number 3 (see Figure 2).

---

Objectives currently addressed by SEB:
1. "Methods and technologies for the creation, storage, use, and exchange of <i>knowledge resources</i> "
2. "Models, methods and technologies for the creation, storage, use, and exchange of <i>networks of competence development programs</i> "
Objectives to be addressed after the addition of online courses and e-portfolios:
3. "Standards-based methods and tools for the creation, storage, use, and exchange of formal and informal <i>learning activities and units of learning</i> "
4. "Methods and technologies for the creation, storage, use, and exchange of formal and informal <i>competence development programs</i> "

---

Figure 2: TENCompetence project core objectives (Koper & Specht, 2007, p. 232)

### 3.1. Targeted competencies

SEB co-supervisor, Tzvetkova-Arsova, is a widely recognized expert on the education of the visually and multiply impaired. Hence, the decision about which competencies to target for a trial online course was relatively easy. The principal standard that she adheres to is from the United States, and titled, *Perkins School for the Blind Competencies for Teachers of Learners Who Are Deafblind* (McLetchie & Riggio, 1997)<sup>3</sup>. The following competencies are addressed by the Perkins document:

- |   |                                 |
|---|---------------------------------|
| (1) Effects of deaf-blindness                         | (5) Auditory and visual systems |
| (2) Personal identity, relationships, and self-esteem | (6) Orientation and mobility    |
| (3) Concept development                               | (7) Environment and materials   |
| (4) Communication                                     | (8) Professional issues         |

An appendix to the Perkins document is included that lists a comprehensive set of competencies essential for all beginning special education teachers regardless of their specialization. The appendix is an excerpt from an international standard published by the Council for Exceptional Children (1995; 2003). The additional competencies addressed include:

- |   |                                       |
|---|---------------------------------------|
| (1) Philosophical, historical, and legal foundations of special education | (6) Language                          |
| (2) Characteristics of learners   | (7) Instructional planning            |
| (3) Individual differences  | (8) Assessment                        |
| (4) Instructional strategies  | (9) Professional and ethical practice |
| (5) Learning environments and social interactions                         | (10) Collaboration                    |

---

<sup>3</sup> Though the Perkins competencies have not been updated since 1997, the School does not intend to update them in the near future as they are still valid (S. Sullivan, personal communication, May 2007). There is a companion document available for paraprofessionals, but the original 1997 document is still the best choice for the trial course.

### ***3.2. Development and deployment plan***

Initially, online course development will coincide with a month-long professional development course offered by Sofia University's Department of Special Education. The course specifically targets unemployed Bulgarian teachers interested in retraining as special educators. Ten students are anticipated to enrol for each course and attend five days a week for four weeks. Two 150-academic-hour modules will be covered during each intensive course. The modules available include education of the hearing impaired; education of the visually impaired; education of the intellectually disabled; and speech therapy. In addition, 300-academic-hour modules are available for adapted physical activities; and social work. The total number of month-long courses offered will depend on demand.

Lectures that address the target competencies listed above will be videotaped and posted to SEB. A password-protected Moodle course module has been created to host the videos. Students in the course will be able to review videotaped lectures from the previous week and discuss them online. A double-sided postcard handout was created and will be distributed to students that explains how to register for SEB and how to access the online course. The pedagogical principles followed will vary because each lecture will be delivered by a different department member. The various pedagogical principles used will be reviewed during the development period (see Figure 3). The most appropriate principles as well as the most appropriate units of learning will be decided upon during this period.

In addition to video, the learning materials provided in the course will be posted to SEB. As course materials are posted, relevant IMS specifications will be kept in mind (IMS Global Learning Consortium, 2007). The latest version of Moodle, 1.9, does not fully support IMS content exporting. Full support is expected later this year (Moodle community, 2007b).

	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	
<b>Cycle 1 pilots</b>	Run pre-pilots				Run pilots		Analysis and reporting												
<b>Cycle 2 pilots (not finalized)</b>	Initial planning	Planning			Implementation of pilots, development of instruments				Run pilots		Analysis and reporting		Cycle 3 pilot planning						
<b>SEB cycle 2 pilot (proposed)</b>	Initial planning for <u>blended course</u> (both in class and online)				- Develop course materials and instruments - Preliminary testing with SU professional development courses				Run <u>pilot A</u> , SU spring session			Run <u>pilot B</u> , SU summer session		Analysis and reporting		Initial planning, <u>distance course</u> for cycle 3 pilot			
					- Website development - Integration and testing of TENCompetence PCM client software														
					- Video collection, lectures from professional development and undergraduate courses at Sofia University (SU), Dept. Special Education - Online content development and posting, IMS specifications followed - Participant recruitment														
					- Elgg / *Mahara ePortfolio integration and testing, example templates - Elgg / Mahara online help translation									Initial planning, ePortfolios cycle 3 pilot					

\*Mahara, rather than Elgg, is to be formally integrated with Moodle version 2.0 (Moodle community, 2007b).

Figure 3: SEB cycle 2 pilot development, deployment and validation schedule mapped to preliminary TENCompetence pilot timetable (Arenales et al., 2006; TENCompetence, 2005)

During SEB *pilot A*, access to online materials and discussion forums will not be strictly required (see Figure 3). The new TENCompetence personal competence manager (PCM) open-source client software will also be piloted. During *pilot B*, online course access will be required to a greater degree, but a blended approach will still be necessary. Future courses may be offered only at a distance, possibly during cycle 3. The distance approach would support teacher training in authentic work environments accompanied by peer tutoring. The approach would also suit current trends in Bulgarian special education. Such trends include the integration of students with special needs into regular schools and transitioning role of teachers currently employed in special schools. Refer to the “Win-win” section below.

The cycle 1 pilots, now approaching the analysis and reporting stage, include ICT teacher training, coordinated by Sofia University; and Digital cinema professional training, coordinated by the Universitat Pompeu Fabra, Barcelona. The cycle 2 pilots proposed, among others, include a medical pilot on colorectal cancer; pilot for training via gaming simulations; and water management training pilot. The SEB proposal, described herein, is for a pilot on teacher training for education of the deafblind and multiply handicapped. All cycle 2 pilots will test the new TENCompetence PCM software (Arenales et al., 2006; Stefanov et al., 2007).

#### 4. E-portfolios

Key to the competence development process described by Schoonenboom, Tattersall, Miao, Stefanov, and Aleksieva-Petrova (2006) is the use of e-portfolios. The process is described as follows:

As a learner starts with competence development, self assessment will be the most prominent, if not the only, form of assessment. This orientation stage is followed by a stage of evidence collection, which is supported by e-portfolio building. In a third stage, the learner is judged by others, and in this stage organisations make use of assessment forms such as on-the-job assessment, 360-degree assessment and assessment centres. In the fourth stage, the learner performs competence development activities. (Schoonenboom et al., 2006, p. 1)

E-portfolios are critical to the success of this model and to the TENCompetence project (TENCompetence, 2005). SEB will provide formal opportunities for competency development as described in the “Online courses” section above. The following section describes the types of e-portfolios relevant to SEB and how they will be integrated. E-portfolio integration is intended to help SEB better address TENCompetence objectives numbers 2 and 4 (see Figure 2).

##### 4.1. Types of e-portfolios

“Very simply put, a *portfolio* is a collection of evidence that is gathered together to show a person’s learning journey over time and to demonstrate their abilities” (Butler, 2006, p. 2)<sup>4</sup>. For SEB, e-portfolios will be used to showcase the credentials and lifelong learning path of professionals in a specific discipline. Summarizing Butler’s (2006) literature review, it can be argued that there are four types of portfolios:

- (1) Showcase or dossier portfolios: show achievements in study or in the workplace for job selection, promotion, or professional networking
- (2) Learning, process, or training portfolios: document learning over time
- (3) Credential or assessment portfolios: for evaluation, registration, or certification purposes
- (4) Personal development, self-directed, or reflective portfolios: document self-directed learning

Butler argues that “the varying ways of typifying a portfolio all serve to emphasise the importance of deciding upon the purpose and audience of the portfolio” (2006, p. 3). The first

---

<sup>4</sup> Arguments have been made that e-portfolios are basically electronic versions of paper portfolios. Butler (2006) cites a work by Barrett and Knezek (2003) to support this claim. Butler tends to use the terms portfolio and e-portfolio interchangeably but attentively discusses the additional considerations, namely technical, required to implement e-portfolios.

type of portfolio listed, *showcase portfolio*, is most relevant to SEB's target audience, which includes:

- Students preparing to enter the special education workforce
- Practising special educators
- Teacher trainers
- Researchers

#### **4.2. Development and deployment plan**

At this time, Moodle does not offer e-portfolios, but code is available to integrate Elgg (Moodle community, 2007a). Elgg is a popular open-source program for social networking and e-portfolio creation. Essentially, it allows for the creation of websites similar to MySpace or Facebook, two of the most popular websites on the Internet. According to Alexa Internet, MySpace is the 6th most visited website and Facebook the 17th (Alexa Internet, 2007; Andrews, 2007; Eduspaces community, 2007; Elgg community, 2007; O'Hear, 2006).

To SEB users, integrating Elgg with Moodle will only mean clicking the portfolio link from the main menu on the homepage. From there, users will be directed to example portfolios. SEB e-portfolios are anticipated to include resumes; descriptions of educational certifications, work experience, and competencies; photos; documents that validate achieved competencies; learning plans for desired competencies; academic and professional references; accolades; published and unpublished works; and anything else relevant to a special educator's academic and professional career. The timeframe planned for Elgg integration is listed in Figure 3.

At present, it is uncertain if Elgg development will include conformance to IMS e-portfolio specifications. Conformance is important because e-portfolios must be portable, meaning that users can take their content and easily reuse it on other systems. TENCompetence argues that e-portfolios must be owned by the user and standardized across Europe so that they can easily be shown to any employer or learning provider (TENCompetence, 2005). Nonetheless, Moodle is scheduled to formally integrate an e-portfolio system<sup>5</sup> in the near future and Moodle's roadmap includes provisions for compliance with IMS specifications (Moodle community, 2007b).

### **5. Win-win**

There are many reasons why the SEB expansion described herein is a win-win opportunity for Bulgaria, special educators, special needs students, TENCompetence, and the EU. For one, the expansion suits Bulgarian and EU plans to implement lifelong learning

---

<sup>5</sup> Mahara, rather than Elgg, is currently planned for integration with Moodle (Moodle community, 2007b). Mahara is a recent open-source e-portfolio project that, from the outset, has been designed to integrate with Moodle (Mahara community, 2007).

solutions facilitated by information technology (Bulgarian National Assembly, 2001; Commission of the European communities, 2005).

Secondly, TENCompetence requires cycle-2 pilots that address non-technical competencies; address competency development in authentic work environments; can test the TENCompetence PCM software; are sustainable after research completes; employ open-source, standards-based technologies such as Moodle; and attract long-term associate partners such as Sofia University's Department of Special Education and Bulgaria's Ministry of Education and Science (Hemmje et al., 2007).

Furthermore, Bulgaria is transforming continually to meet EU requirements. The EU currently focuses on judicial system reform and organized crime and corruption (Commission of the European communities, 2006). As the Bulgarian government attends to these front-page concerns, other issues, such as Bulgaria's faltering university system (Popkostadinova, 2007), may be overlooked. Other examples include the need to improve the quality of support available to disabled children; integrate special needs students into the regular school system; and integrate Roma children (Rowling, 2006; Smith, 2005, 2006a, 2006b, 2006c; Tzvetkova-Arsova, 2004; UNICEF, 2007; UNICEF Innocenti Research Centre, 2005). The Bulgarian Ministry of Education and Science has published an official strategy for integration, but this is only the first of many steps to come (Bulgarian Ministry of Education and Science, 2004). Integration in any country is a very difficult task. Moreover, integration is only the first step toward inclusion<sup>6</sup> (Peterson & Konza, 2006).

As Bulgaria transitions to a system of integration, it faces many challenges. Such challenges include the restructuring of hundreds of special schools and institutions and the retraining of special educators and general educators nation wide (Cholakova & Georgieva, 1996; Peterson & Konza, 2006; Tzvetkova-Arsova, 2004). It follows that integration will catalyze a major shift in the competencies required for the practice of special education in Bulgaria. Thus, the integration process has the potential to create unstable demands on the education system unless effective competency development programs, such as those proposed by SEB and TENCompetence, can be provided.

## **6. Conclusion**

This paper discussed a potential partnership between two research projects: SEB and TENCompetence. Both projects seek to engage Internet technologies, for example, e-portfolio, online course management, and Web 2.0 social networking software, to facilitate

---

<sup>6</sup> Integration is the accommodation of students with special needs in a "normal" education system. Inclusion seeks to completely remove the distinction between special and regular education, and to provide an appropriate education for all students, despite their level of disability, in their local school. It is a philosophical move away from the accommodation of students with special needs into a "normal" system, towards a full inclusion model where everyone is considered normal.

professional development and lifelong learning. SEB requires competency-development tools to better support its members, and TENCompetence requires long-term associate partners. Moreover, both projects expect that early and continual focus on sustainability will lead to long-term adoption of research outcomes. For TENCompetence, sustainability will largely depend on the number and diversity of associate partners recruited. For SEB, sustainability will depend on the quality and relevance of professional development tools and resources provided to its members. Hence, the development of a SEB test pilot for TENCompetence is a win-win opportunity. If successful, similar approaches may be taken for the professional development of special educators in neighbouring Balkan countries, especially those new to or soon to enter the EU.

### **Acknowledgement**

This paper has been partly sponsored by the TENCompetence Integrated Project of the European Commission's 6th Framework Programme, priority IST/Technology Enhanced Learning (Contract 027087), [www.tencompetence.org](http://www.tencompetence.org).

### **References**

- Alexa Internet (2007), "Alexa: the web information company", available at:  
<http://www.alexa.com> (accessed 1 June 2007).
- Andrews, R. (2007), "Don't tell your parents: schools embrace MySpace", *Wired News*, 19 April, available at:  
<http://www.wired.com/culture/education/news/2007/04/myspaceforschool> (accessed 1 June 2007).
- Arenales, J., Artacho, M., Blat, J., Cornelissen, R., Ruskov, P., Stefanov, K., et al. (2006), "Pilot evaluation plan (Project deliverable D4.1 for IST-2005-027087)", 30 November, available at: <http://www.partners.tencompetence.org> (accessed 1 January 2007).
- Brown, A.L. (1992), "Design experiments: theoretical and methodological challenges in creating complex interventions". *Journal of the Learning Sciences*, Vol. 2 No. 2, pp. 141-78.
- Bulgarian Ministry of Education and Science (2004), "National plan for the integration of children with special educational needs or chronic cases within the public education system", available at: <http://www.minedu.government.bg> (accessed 1 May 2006).
- Bulgarian National Assembly (2001), "National strategy on introducing ICT in the Bulgarian schools", available at:  
[http://www.minedu.government.bg/opencms/export/sites/mon/left\\_menu/documents/strategies](http://www.minedu.government.bg/opencms/export/sites/mon/left_menu/documents/strategies) (accessed 1 May 2006).

- Butler, P. (2006), "A review of the literature on portfolios and electronic portfolios (eCDF E-portfolio Project)", October, Palmerston North, New Zealand, Massey University College of Education, available at:  
<https://eduforge.org/docman/view.php/176/1111/ePortfolio%20Project%20Research%20Report.pdf> (accessed 1 June 2007).
- Cholakova, M., & Georgieva, D. (1996), "The present situation and the future development of special education in Bulgaria", paper presented at the *10th Annual World Congress of the International Association for the Scientific Study of Intellectual Disabilities, Helsinki, Finland*.
- Collins, A. (1992), "Towards a design science of education", in Scanlon, E. & O'Shea, T. (Eds), *New Directions in Educational Technology*, Springer-Verlag, Berlin, pp. 15-22.
- Commission of the European communities (2005), "Implementing the education and training 2010 work programme: 2005 progress report. Bulgarian contributions to 2006 joint report of the council and the commission", December, available at:  
[http://ec.europa.eu/education/policies/2010/nationalreport\\_en.html](http://ec.europa.eu/education/policies/2010/nationalreport_en.html) (accessed June 6, 2007).
- Commission of the European communities (2006), "Monitoring report on the state of preparedness for EU membership of Bulgaria and Romania (COM2006 549 final)", September, available at: <http://www.evropa.bg/en/del/eu-and-bulgaria/documents.html> (accessed 29 May 2007).
- Council for Exceptional Children (1995), *What Every Special Educator Must Know: the International Standards for the Preparation and Certification of Special Education Teachers*, Council for Exceptional Children, Reston, VA.
- Council for Exceptional Children (2003), *What Every Special Educator Must Know: the International Standards for the Preparation and Certification of Special Education Teachers*, Council for Exceptional Children, Arlington, VA.
- Design-Based Research Collective (2003), "Design-based research: an emerging paradigm for educational inquiry", *Educational Researcher*, Vol. 32 No. 1, pp. 5-8.
- Dougiamas, M., & Taylor, P. (2003), "Moodle: using learning communities to create an open source course management system", in Kommers, P. & Richards, G. (Eds), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (ED-MEDIA)*, 23-28 June, AACE, Chesapeake, VA, pp. 171-8.
- Eduspaces community (2007), "Eduspaces: e-learning 2.0", available at: <http://elgg.net> and <http://eduspaces.net> (accessed 1 June 2007).
- Elgg community (2007), "Elgg", available at: <http://elgg.org> (accessed 1 June 2007).

- Hemmje, M., Majek, M., Massy, J., & Westhoff, J. (2007), "TENCompetence month 1 to month 18 review compiled for the information society technologies priority of the European Union's sixth framework programme (Review Report FP6-2002-IST-027087 Rev. 1.0)", 14 February, Maastricht, the Netherlands, available at: <http://www.partners.tencompetence.org> (accessed 30 May 2007).
- IMS Global Learning Consortium (2007), "Specifications", available at: <http://www.imsglobal.org/specifications.html> (accessed 1 June 2007).
- Koper, R., & Specht, M. (2007), "Ten-competence: lifelong competence development and learning", in Sicilia, M.-A. (Ed.), *Competencies in organizational e-learning: concepts and tools*, Idea Group Publishing, Hershey, PA, pp. 230-47.
- Koper, R., & Stefanov, K. (Eds) (2006), *Learning networks for lifelong competence development: proceedings of international workshop on learning networks for lifelong competence development, 30-31 March*, TENCompetence, Sofia, Bulgaria, available at: <http://hdl.handle.net/1820/836> (accessed 1 May 2007).
- Lave, J., & Wenger, E. (1991), *Situated Learning: Legitimate Peripheral Participation*, Cambridge University Press, New York, NY.
- McLetchie, B.A.B., & Riggio, M. (1997), *Competencies for Teachers of Learners Who are Deafblind: Perkins National Deafblind Training Project*, Perkins School for the Blind, Watertown, MA.
- Moodle community (2007a), "Elgg", available at: <http://docs.moodle.org/en/Elgg> (accessed 1 June 2007).
- Moodle community (2007b), "Roadmap", available at: <http://docs.moodle.org/en/Roadmap> (accessed 1 June 2007).
- Moodle community (n.d.), "Moodle", available at: <http://www.moodle.org> (accessed 9 June 2007).
- O'Hear, S. (2006), "A space on the web that we control: imagine an e-portfolio based on personal publishing and social networking that can automatically link you to others with similar interests", *The Guardian*, 7 March, available at: <http://education.guardian.co.uk/elearning/story/0,,1724614,00.html> (accessed 1 June 2007).
- Peterson, R., & Herrington, J. (2005), "The state of the art of design-based research," in Richards, G. (Ed.), *Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, 24-28 October*, AACE, Norfolk, VA, pp. 2302-7.
- Peterson, R., & Konza, D. (2006), "A comparative overview of the integration of students with special needs into mainstream classrooms in Australia and Bulgaria", paper

- presented at the *4th International Conference on Comparative Education and Teacher Training, Sofia, Bulgaria, 1-4 May*.
- Popkostadinova, N. (2007), "Fixing a (black) hole", *Transitions Online*, 2 May, available at: <http://www.tol.cz> (accessed 7 May 2007).
- Preece, J. (2000), *Online Communities: Designing Usability, Supporting Sociability*, John Wiley, New York, NY.
- Reeves, T.C. (2000), "Socially responsible educational research". *Educational Technology*, Vol. 40 No. 6, pp. 19-28.
- Reeves, T.C., & Hedberg, J.G. (2003), *Interactive Learning Systems Evaluation*, Educational Technology Publications, Englewood Cliffs, NJ.
- Reeves, T.C., Herrington, J., & Oliver, R. (2005), "Design research: a socially responsible approach to instructional technology in higher education". *Journal of Computing in Higher Education*, Vol. 16 No. 2, pp. 97-116.
- Rowling, J.K. (2006), "My fight by JK Rowling", *The Sunday Times*, 5 February, available at: <http://www.timesonline.co.uk/article/0,,2092-2025101.html> (accessed 25 October 2006).
- Schoonenboom, J., Tattersall, C., Miao, Y., Stefanov, K., & Aleksieva-Petrova, A. (2006), "The role of competence assessment in the different stages of competence development", Manuscript submitted for publication, available at: <http://hdl.handle.net/1820/871> (accessed 1 June 2007).
- Smith, M.K. (2006), "Communities of practice", in *The Encyclopaedia of Informal Education*, 21 June, available at: [www.infed.org/biblio/communities\\_of\\_practice.htm](http://www.infed.org/biblio/communities_of_practice.htm) (accessed 7 March 2007).
- Smith, N. (2005), "Child patients starve in Turkey's mental hospitals", *The Sunday Times*, 9 October, available at: <http://www.timesonline.co.uk/tol/news/world/article576395.ece> (accessed 6 June 2007).
- Smith, N. (2006a), "Bulgaria and Romania await decision on EU membership", *EU news*, 28 April, available at: [http://www.expatica.com/actual/article.asp?subchannel\\_id=165&story\\_id=29635](http://www.expatica.com/actual/article.asp?subchannel_id=165&story_id=29635) (accessed 6 June 2007).
- Smith, N. (2006b), "Plight of Bulgaria's lost children: tied up and neglected in care homes", *The Sunday Times*, 16 April, pp. 21.
- Smith, N. (2006c), "Revealed: Bulgaria's baby traders", *The Sunday Times*, 1 October, available at: <http://www.timesonline.co.uk> (accessed 25 October 2006).
- Stefanov, K., Naskinova, I., & Nikolov, R. (2007), "ICT-enhanced teacher training for lifelong competence development", paper presented at the *Joint IFIP Conference:*

*WG3.1 Secondary Education, WG3.5 Primary Education: Informatics, Mathematics, and ICT: a 'golden triangle', Boston, MA, 27-29 June.*

TENCompetence (2005), "Integrated project TENCompetence (Project overview report for IST-2005-027087)", 22 March, available at: <http://www.partners.tencompetence.org> (accessed 1 June 2007).

Tzvetkova-Arsova, M. (2004), "Some social issues in Bulgaria: integration and inclusion of socially disadvantaged groups—disabled and minority", paper presented at the *International Fulbright-Hays Seminar, Sofia, Bulgaria, July.*

UNICEF (2007), "Children's rights for Roma children", 21 May, available at: [http://www.unicef.org/media/media\\_39677.html](http://www.unicef.org/media/media_39677.html) (accessed 29 May 2007).

UNICEF Innocenti Research Centre (2005), "Innocenti insight: children and disability in transition in CEE/CIS and Baltic states (88-89129-20-8)", available at: <http://www.unicef-irc.org/publications> (accessed 2 December 2006).

van den Akker, J. (1999), "Principles and methods of development research", in van den Akker, J., Nieveen, N., Branch, R.M., Gustafson, K.L. & Plomp, T. (Eds), *Design methodology and developmental research in education and training*, Kluwer Academic Publishers, the Netherlands, pp. 1-14.

Wenger, E. (1999), *Communities of Practice: Learning, Meaning, and Identity*, Cambridge University Press, Cambridge.

Wenger, E., McDermott, R., & Snyder, W. (2002), *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Harvard Business School Press, Boston.