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DEVELOPING OF SCIENTIFIC-AND-PEDAGOGICAL SELF-EFFICACY OF PRE-SERVICE SECONDARY SCHOOL TEACHERS

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Abstract. The article deals with the peculiarities of developing scientific-and-pedagogical self-efficacy of the pedagogical university students. Scientific-and-pedagogical self-efficacy of pre-service secondary school teachers is defined as their beliefs that they are capable to produce successfully designated levels of scientific-and-pedagogical performance in the educational area.

Introduction

Modern society is becoming more person-oriented. Individual personal development is declared to be a major prerequisite for social and economic progress. "That's why the high-priority areas in the XXI century, -rightly stresses academician V.G. Kremen, - have become a science as an area that produces new knowledge, and education as an area that makes knowledge a person's value, and above all, provides an individual persons' development rights" [5, p. 12].

In the context of the competence approach to professional education of future secondary school teachers and personal development issues, exploring the pedagogical self-efficacy problem is rather relevant. Today, more than ever, society needs highly efficient citizens, able to properly assess results of their performance (including professional) and their own capabilities.

Professional competence of secondary school teachers includes also their ability to easily guide in the flow of scientific information, create authors training programs, implement innovative educational technologies. At the same time a creative approach to solving teaching tasks demands from students to master the methods of conducting educational research, to be aware of the methodology and logic of scientific research and so on. Therefore one of the important aspects of preparing future secondary school teachers to educational activities is the development of their scientific-and-pedagogical self-efficacy.

Founded in social cognitive theory of Albert Bandura [1], teachers' self-efficacy beliefs have been repeatedly associated with positive teaching behaviors and student outcomes. However, teacher efficacy has developed a storied history regarding construct validity and measurement integrity. Study of teacher efficacy now stands on the verge of maturity, but such developmental growth will likely be contingent on development of strong theoretical models and effective instrumentation to assess theoretical constructs.

Central to Bandura's (1997) framework is his concept of self-efficacy. Bandura's aspirations about self-efficacy were grand, as reflected in the title of his 1977 article "Self-Efficacy: Toward a Unifying Theory of Behavioral Change." In this seminal work, Bandura defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" [1].

A. Bandura proposed that because self-efficacy beliefs were explicitly self-referent in nature and directed toward perceived abilities given specific tasks, they were powerful predictors of behavior. The research literature has supported this proposition. Research has linked efficacy to a variety of clinical issues such as phobias (Bandura, 1983), addiction (Marlatt, Baer, & Quigley, 1995), depression (Davis & Yates, 1982), and smoking behavior (Garcia, Schmitz, & Doerfler, 1990). Educationally, self-efficacy beliefs are related to academic performance and self-regulated learning (cf. Hackett, 1995; Pajares, 1996; Schunk, 1991; Zimmerman, 1995).

Although a number of studies have investigated self-efficacy in different subject matters, little research has been conducted to explore the perceived efficacy of pre-service secondary school teachers.

Understanding teachers' perceptions and beliefs is important because teachers, heavily involved in various teaching and learning processes, are practitioners of educational principles and theories. Teachers have a primary role in determining what is needed or what would work best with their students. Findings from research on teachers' perceptions and beliefs indicate that these perceptions and beliefs not only have considerable influence on their instructional practices and classroom behavior but also are related to their students' achievement.

Developing of self-efficacy beliefs as a key component of human motivation and behavior is an extra actual problem nowadays (A.Bandura, DJ.Kctclhunt, F.Pajarcs and others). It touches all the aspects of human functioning, including professional areas. In the present article we're going to present the peculiarities of developing scientific-and-pedagogical self-efficacy of students, members of scientific-and-pedagogical

society 'Gaudeamus' of Pedagogical Institute of Eastern European National University named after Lesya Ukrainka.

Albert Bandura, the author of social cognitive theory, determined self-efficacy as people's judgments of their capabilities to produce designated levels of performance [2]. Considering this, *scientific-and-educational self-efficacy of pre-service secondary school teachers* is defined *as their beliefs that they are capable to produce successfully designated levels of scientific-and-educational performance in the educational area.*

According to social cognitive theory, people are more likely to perform tasks they are capable of accomplishing and are less likely to engage in tasks in which they feel competent. Students' beliefs about their competencies in given domain affect:

- the choices they make;
- the effort they put forth;
- their inclinations to persist at certain tasks;
- their resiliency in face of failure.

The self-efficacy beliefs that future secondary school teachers hold influence the choices they make, the amount of effort they expend, their resilience to encountered hardships, their persistence in the face of adversity, the anxiety they experience, and the level of success they ultimately achieve while conducting educational researchers. Individuals with strong self-efficacy beliefs work harder and persist longer when they encounter difficulties than those who doubt their capabilities. Results from research on self-efficacy beliefs indicate that these judgments of personal competence arc often stronger predictors of behavior than are prior accomplishments, skill, or knowledge (Multon, Brown, & Lent [4]; Pajarcs [8]; Schunk [9]).

Thus, knowing the perceptions and beliefs of teachers enables one to make predictions about teaching and assessment practices in classrooms.

Teachers' beliefs about their own effectiveness, known as teacher efficacy, underlie many important instructional decisions which ultimately shape students' educational experiences. Teacher efficacy is believed to be strongly linked to teaching practices and student learning outcomes.

The task of creating environments conductive to learning rests heavily on the talents and self-efficacy of teachers. Evidence indicates that classroom atmospheres are partly determined by teachers' beliefs in their instructional efficacy.

The literature widely documents the pervasive influence of self-efficacy beliefs and corroborates social cognitive theory that places these beliefs at the roots of human agency (Bandura, 2001).

Secondary school Teachers' sense of efficacy can potentially influence both the kind of environment that they create as well as the various instructional practices introduced in the classroom (Bandura, 1997). Furthermore, teachers with a high sense of self-efficacy arc confident that even the most difficult students can be reached if they exert extra effort; teachers with lower self-efficacy, on the other hand, feel a sense of helplessness when it comes to dealing with difficult and unmotivated students (Gibson & Dembo, 1984). Gibson and Dembo found that teachers, who have a high sense of instructional efficacy devote more classroom time to academic learning, provide students who have difficulty learning with the help they need to succeed, and praise them for their accomplishments. In contrast, teachers who have a low sense of instructional efficacy spend more time on non-academic pastimes, readily give up on students if they do not get quick results, and criticize them for their failures. Thus, teachers who believe strongly in their instructional efficacy create mastery experiences for their students. Those beset by self-doubts construct classroom environments that are likely to undermine students' sense of efficacy and cognitive development [4].

As Woolfolk and Hoy reported, teachers' sense of personal efficacy affects their orientation toward the educational process as well as their specific instructional practices. Those who have a low sense of instructional efficacy favor a custodial orientation that relics heavily on extrinsic inducements and negative sanctions to get students to study. Teachers who believe strongly in their instructional efficacy support development of students' intrinsic interests and academic self-directedness [10].

A.Bandura hypothesized that individuals obtain information about their self-efficacy in four ways. According to this statement we consider that future secondary school teachers form their self-efficacy perceptions by interpreting information from four sources. Bandura (1997) has argued hat the most important source of information comes from the interpreted results of one's past performance, which he called **mastery experiences.** Authentic mastery of a given task can create a strong sense of efficacy to accomplish similar tasks in the future. Alternatively, repeated failure can lower efficacy perceptions, especially when such failures occur early in the course of events and cannot be attributed to lack of effort or external circumstances. Continued success, on the other hand, can create hardy efficacy beliefs that occasional failures are unlikely to undermine. That means that students' own performances affect their pedagogical-and-scientific self-efficacy: students who successfully frame research questions, for example, will feel more confident when again asked to frame research questions.

The second source of self-efficacy information is the **vicarious experience** that individuals undergo when they observe others performing tasks. Observing the successes and failures of others perceived as similar in capability contributes to individuals' beliefs of their own capabilities. The behavior of models is particularly influential, and this is a prominent area of research in the study of self-efficacy. In situations in which individuals have had little experience with which to form a judgment of their competence in a particular area, models are especially informative. So, future secondary school teachers' vicarious experiences affect their pedagogical-and-scientific self-efficacy: when a student sees a peer successfully conduct a small-scale investigation, she may feel more confident when asked to conduct a small-scale investigation herself.

Beliefs of personal competence arc also influenced by the **verbal persuasions** one receives. Verbal messages and social encouragement help individuals to exert the extra effort and maintain the persistence required to succeed, resulting in the continued development of skills and of personal efficacy. However, verbally convincing people that they arc indeed capable of accomplishing a particular task is hypothesized to have the greatest effect on those who already believe themselves capable (Bandura, 1997). Of course, messages can also work to undermine efficacy beliefs when used to convince people that they lack capabilities. For example, when women receive social messages that they do not belong in a male-dominated field such as mathematics, they may be especially vulnerable to believing that they are not, and cannot be, competent in that area. It is important to keep in mind Bandura's (1997) caution that verbal persuasions can more easily undermine efficacy beliefs than strengthen them. It becomes obvious that students' scientific-and-pedagogical self-efficacy can be affected by others' verbal persuasion: a teacher may persuade a student that she can successfully present research-based evidence and argument, and thus she approaches the next presenting task confidently.

Individuals look to their **physical and emotional states** as a fourth source of information about their capabilities. Stress and tension are often interpreted as indicators of susceptibility to failure, and one's mood can also have a pronounced effect on self-efficacy beliefs. Typically, optimism and a positive mood enhance efficacy beliefs, whereas depression, despair, or a sense of despondency diminishes them. In other words, a student's confidence in approaching a researching task inversely depends on his level of anxiety induced by that assignment.

All of these experiences can affect students' scientific-and-pedagogical self-efficacy either positively or negatively.

Recall this one prominent theme to emerge from the narratives was that, just as important as it was for the future primary school teachers to believe in themselves, it was also important that others believed in them. Banaura (1997) has suggested that the "self-affirming beliefs of others promote development of skills and a sense of personal efficacy" [2, p. 101]. This is reminiscent of Cooley's (1902) metaphor of the looking-glass self the idea that individuals[1] self-conceptions arc, in part, formed as a result of their perceptions of how other people perceive them [4]. That is, the perceptions and judgments of others act as mirrors through which individuals view and define their own self-beliefs. This conception has become the basis for organization of student scientific and educational association 'Gaudcamus' at Pedagogical Institute of Eastern European National University named after Lesya Ukrainka.

The main objectives of student scientific-and-educational association functioning in the context of developing future secondary school teachers' self-efficacy were to help students:

- to become familiar with an appropriate range of intellectual and methodological traditions within the field;
- to become skilled and critical readers of educational research;
- to develop in-depth knowledge in depth of some substantive area of education and educational research;
- to develop their capacity to frame research questions and devise appropriate research designs;
- to develop confidence in using a range of both qualitative and quantitative approaches to gathering, analyzing and interpreting evidence;
- to develop skills in using a range of technologies assisting data collection and data analysis;
- to develop their skills in presenting research-based evidence and argument;
- to gain practical experience of educational research through conducting a small-scale investigation.

The training program for students, the members of scientific-and-educational association 'Gaudeamus', contains two functional vectors, such as: theoretical vector and practical activity vector.

Thus, the *theoretical vector* provides theoretical training of future teachers (knowledge of scientific methods of educational research and their classification, especially the use of empirical methods of scientific and educational research, projectivc techniques of conducting the research, etc.).

Practical activity vector of the association functioning is aimed to coordinate the research sections of society on the principle of integration training courses, scientific and educational activities of students, future

secondary school teachers.

Considering scientific interests of educational association members and their preferred topics of scientific and educational researches, the functioning of the Society was organized under the relevant sections (Pedagogy section, Psychology section, Correctional Education section, Information Technology in Education section, section of specific techniques of teaching and others). Implementation of practical and activity vector is performed by discussing the results of students' scientific and educational researches at scientific conferences, forums, seminars (inter-regional, national, international) and others.

Conclusion

Some self-efficacy researchers have suggested that teachers should pay as much attention to students' perceptions of competence as to actual competence, for it is the perceptions that may more accurately predict students' motivation and future academic choices [5, 6, 7]. Assessing students' self-efficacy can provide teachers with important insights. As noted earlier, self-efficacy beliefs strongly influence the choice of majors and career decisions of university students. In some cases, unrealistically low scientific-and-educational self-efficacy perceptions not lack of capability or skill may in part be responsible for avoidance of research-related courses and careers. If this is so, in addition to skill improvement, researchers should acquaint pedagogical professional training universities with ways to identify these inaccurate judgments and aid in designing and implementing interventions to alter them.

References

1. Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.
2. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, \9\215.
3. Coolcy, C. H. (1902). Human nature and the social order. New York: Scribner.
4. Gibson, S., & Dembo, M. (1984). Teacher efficacy: Aconstructvalidation. Journal of Educational Psychology, 76, 569-582.
5. Kremen V. G. Philosophy of Education of the XXI century//. Ukraine's Education. - 2002. -p. 5.
6. Mead, G. H. (1982). The individual and the social self Chicago: University of Chicago Press.
7. Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A mcta-analytic investigation. Journal of Counseling Psychology, 38, p. 30-38.
8. Pajarcs, F. (1996). Self-efficacy beliefs in academic settings. Review of Educational Research, 66, p. 543-578.
9. Schunk, D. H. (1991). Self-efficacy and academic motivation. Educational Psychologist, 26, p. 207-231.
10. Soodak, L. C. & Podell, D. M. (1997). Efficacy and experience: perceptions of efficacy among preservice
and practicing teachers. Journal of Research and Development in Education, 30, p. 214-221.