Science Student Teachers' Views About Their Competency in Teaching
(Pandangan Guru Pelatih Sains Terhadap Kecekapan Mereka dalam Pengajaran)

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ABSTRACT

The purpose of this study was to determine student teachers' views of professional development and lifelong learning and how much do they feel themselves prepared for being professional, as a teacher. The study was carried out with 25 science student teachers in Fatih Faculty of Education at Karadeniz Technical University in Trabzon. A survey research design with six open-ended questions was employed as a research method. Qualitative and quantitative data were gathered. Findings of the research showed that science student teachers insufficient in classroom felt they are control, subject knowledge. However, competent in, professional and pedagogical issues. In implication of that, more emphasis should be given to practical activities, the attainment level of content knowledge taught in subject courses should be appropriate to primary school level, and the attainment ways to knowledge should be taught.

Keywords: Student teachers, lifelong learning, professional development, primary science

ABSTRAK

Tujuan kajian ini ialah untuk mengenal pasti pandangan guru pelatih terhadap perkembangan profesionalisme dan pembelajaran sepanjang hayat dan sejauh mana mereka merasakan mereka bersedia untuk jadi seorang guru. Kajian ini dilaksanakan pada 25 guru pelatih Sains Fakulti Pendidikan Fatih di Universiti Teknikal Kardeniz di Trabzon. Reka bentuk kajian ialah survey yang mempunyai enam soalan terbuka. Dapatan kajian menunjukkan guru pelatih sains merasakan mereka tidak bersedia dalam pengurusan bilik darjah, pengetahuan isi kandungan dan pengetahuan pedagogi isi kandungan. Namun, guru pelatih merasakan berkemahiran dalam aspek-aspek berkaitan pedagogi. Satu implikasi ialah latihan pengurusan memberi penekanan ke atas aktiviti berbentuk praktikal tahap pengetahuan isi kandungan yang sesuai dengan tahap pelajar sekolah rendah yang akan diajar dan kaedah untuk menguasai isi kandungan itu perlu diajar.

Kata kunci: Guru pelatih, pembelajaran sepanjang hayat, pengembangan profesionalisme, sains sekolah rendah

INTRODUCTION

Development and improvement of education is explained with a concept; teaching profession. Teaching profession is a dynamic process affected with continuous development and technological innovations. Teachers are accepted as the main actors in all processes in education system. They have various roles in these processes like educating individuals for being a qualified person, providing socialization of individuals and trying to transfer of culture and values into their students, and being a good model for their students. These roles require them to improve themselves continuously (Tonbul 2004).

Teaching profession is provided with the help of general knowledge, special content knowledge and pedagogical formation. Student teachers should be qualified with these types of knowledge at university level regardless of the teaching process he/she is in (URL-1 2008). Teachers currently working at schools should enlarge their knowledge; with new information, competencies and teaching techniques (Kuzu & Becit 2007) as knowledge, technology, and culture are continuously changing if they want to provide quality teaching and learning to their students. Recent literature indicate that teachers, especially novice teachers have difficulties in their initial years in teaching profession even though they were well trained in education faculties (Gödek 2006; Watson 2006; Kuzu & Becit 2007). They report that despite the quality training in education faculties, they still show inadequacies in meeting expectations and demands of real school settings. This clearly indicates that teachers regardless of their experiences have to engage in continuous professional development or lifelong learning. Professional development is a continually process that is trying to enhance teachers qualities, improving skills, attitudes, understandings, or performances in present and future roles (Fullan 1991). Professional development and lifelong learning can be performed by in service courses (INSET), seminars in education system (Day 1999), which are composed from series of planned events to bring in knowledge, ability and attitude to the individual in his/her profession for being successful. Teachers have to join to these activities for supporting their professional development (Gültekin & Çubukçu 2008). For designing effective professional development courses, teachers' development needs on general culture, subject content

knowledge and pedagogical content knowledge should be carefully determined beforehand. In addition to this, student teachers' development needs might also be determined during their training and then, their education programme may be adjusted according to their needs in order to prepare them for real school settings much better when they start to teaching (Cormier 2006). For this reason, determining student teachers' levels of knowledge and skills regarding general culture, subject content knowledge and pedagogical content knowledge seems important to make them aware of their needs and also create opportunities for them and education faculties to remediate these inadequacies (Banks et al. 2004; Korthagen 2004; Korthagen & Kessels 1999). Such a process informs the university staff to be aware of quality of their education policy. Therefore, the main purpose of this study was to determine science student teachers' views of professional development and lifelong learning and to what extent they feel themselves prepared for being professional, as a teacher. In order to achieve these aims, a survey study, mainly qualitative, using a questionnaire with open ended questions was conducted with science student teachers at Karadeniz Technical University, Primary Science Education Department.

METHODOLOGY

RESEARCH APPROACH AND DESIGN

This study employed a survey approach and the instrument used consists of open – ended survey questions. The qualitative technique data collection is modelled on the social sciences with an emphasis on the elicitation of subjects' perspectives, processes and contextual detail (Bryman 2001). It is concerned with processes and meanings that are not measured, in terms of quantity, amount, intensity, or frequency, for the purpose of discovering underlying meanings and patterns of relationships. Qualitative data are rich with words (Maykut & Morehouse 1994; Cohen & Manion 2000), which may contain answers to the 'why' and 'how' questions, and thus, qualitative techniques may provide greater depth of understanding rather than prediction of outcomes compared to their quantitative counterparts (Çimer 2004).

The survey design was employed as it would enable the researchers to go to the field and to collect data on the question topic from a small sample of the population in a short period of time: '*surveys are often cross-sectional studies. That is, the focus is on the make-up of the sample and the state of affairs in the population at just one point in time*' (Robson 1997). In addition, the survey approach could employ more than one method for data collection (Cohen & Manion 2000; Bryman 2001). Cohen and Manion, (2000) state that data collection in a survey study involves one or more of the following data gathering techniques: '*structured or semi-structured interviews, self-completion or postal questionnaires, standardised test of*

attainment or performance and attitude test.' Therefore, this study adopted survey design with a self-completion questionnaire asking open-ended questions.

SAMPLE

The study was carried out with twenty five 4th year science student teachers in Fatih Faculty of Education at Karadeniz Technical University in Trabzon. When they graduate from the faculty, they will be teaching in primary school 6th, 7th and 8th grades.

INSTRUMENT

A questionnaire, composed of six open-ended questions was employed (see appendix). They were aimed at revealing student teachers' views of professional development and lifelong learning, their knowledge and skills related to subject knowledge, subject content knowledge, general knowledge and general culture and teacher education system.

DATA ANALYSIS

The data were analyzed qualitatively, according to the studies done by Bogdan and Biklen (1992), Miles and Huberman (1994). First of all, the student teachers' responses to the questions in the questionnaire were read carefully and repeatedly in order to grasp themes or ideas in line with the research aims as researchers stress the importance of reconsidering the conceptual frameworks and the research questions in the study in aspiring to analyse data (Miles & Huberman 1994; Krueger & Casey 2000). Upon completion of finding themes, they were coded by the researchers. Then, these codes were categorized into sub-codes according to their meanings. Afterwards it was necessary to check coding. This was important as checking coding serves as '*a good reliability check*', gives the researcher confidence that the data is rigorously coded, recorded, and perhaps, quantifiable and gives the researcher additional familiarity with the data becoming aware of further emergent reflections (Miles & Huberman 1994). The sub-codes formed the main codes. As their responses were re-read, repeated re-categorisations occurred as alternative groupings emerged, and the process continued until categories stabilised. In the next step, the data from all questionnaires were pulled together into main categories (Miles & Huberman 1994). In developing the main categories, the set of student teachers' responses was treated as a whole, without regard to individual variation. They are not meant to describe the variation between individuals, but the range of categories represented within the set of responses as a whole (Miles & Huberman 1994). The categories related to the research question "to what extend student teachers feel themselves sufficient in teaching profession were formed according to the teacher's knowledge domains identified by the literature (Shulman 1994, 1999; Banks et al. 1999; Banks 2008), shown in Figure 1.
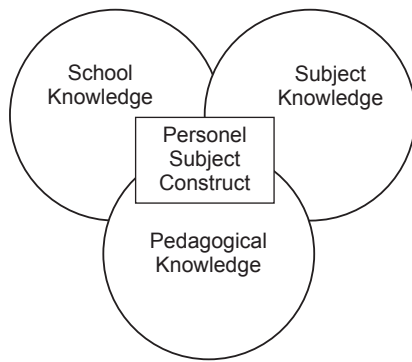
FIGURE 1. 'Teacher Knowledge' – A graphic tool and framework used in DEPTH

FINDINGS AND DISCUSSION

A questionnaire with open-ended questions composed of student teachers' views about professional development and lifelong learning, how confident they are in applying these concepts, how sufficient do they think is the university education in preparing them in these concepts was administered to the participants. The findings were gathered in six main themes; 1. student teachers' views about their competency in teaching profession, 2. student teachers' views about professional development and life-long learning; 3. students teachers' views about professional development activities; 4. students teachers' views about the effectiveness of the faculty to help them develop themselves professionally, 5. student teachers' views about the constraints for their professional development, 6. student teachers' suggestions for better professional development.

STUDENTS TEACHERS' VIEWS ABOUT THEIR SUFFICIENCY IN TEACHING PROFESSION

The data about the student teachers' sufficiency in teaching profession were analysed, as stated above, according to Shulman's category of teacher's knowledge (Table 1).

Very few (two) student teachers expressed their views about curriculum knowledge (Table 1). One of them found himself sufficient, stating that he could know students' needs according to stage of development.

Nine student teachers indicated that they had sufficient knowledge and understanding in using instructional tools, appropriately and various teaching methods and techniques. On the other hand, one student teacher clearly expressed his

TABLE 1. Student teachers views about their sufficiency in performing teaching profession

Professional sufficiency codes	Professional sufficiency	Theme	Student's Views	N=25
Curricular knowledge	Sufficient	Age level	I know students' requirements according to their stage of development	1
	Insufficient	Experience	I have to gather experience	1
Pedagogical content knowledge	Sufficient	Equipment usage	I know usage of equipments very well	2
		Method and techniques	I can implement different method and techniques	7
		Lecture	I think I am insufficient in giving a lecture	1
	Insufficient	Practice	Although I know all the method and techniques, I have difficulty in implementing them	1
Subject content knowledge	Sufficient	Subject knowledge	I believe that I am equipped for courses	6
		Pedagogic knowledge	I believe that I am sufficient in education	2
		Theoretical knowledge	I am equipped with theoretical perspective	1
		Practice	I didn't have opportunity to practice all the content of primary school curriculum	1
	Insufficient	Content Knowledge	I feel myself in sufficient in knowledge and following developments	12
	Partially sufficient	Content Knowledge	I believe that by the time I could make up a shortage about subject knowledge	1
Personal subject construct	Sufficient	Communication ability	I can easily communicate with the students	8
		Being patient	I am creative and patient	3
		Professional affinity	I have personal ability to do this job	2
		Classroom control	I have authority in classroom	4
		Lecture	When I go to school experience courses I feel myself sufficient in teaching	1
	Insufficient	Classroom control	I don't have authority in classroom	2
		Voice control	I couldn't arrange tone of my voice	1
	Partially sufficient		I am be sure of myself in performing this profession as soon as I make a shortage about subject knowledge	1

concern in implementing his theoretical knowledge about teaching methods and techniques to practice.

Almost half of the student teachers emphasise that their level of subject knowledge was insufficient for teaching their subject in an effective way. On the other hand, only six student teachers felt that they were equipped with sufficient subject knowledge for teaching. Finally, most of the student teachers indicated that they were confident in their personal characteristics needed for teaching. Ability to communicate easily, being patient and classroom control were some of those characteristics. However, two of them indicated that they were so weak in classroom control. Watson, (2006) indicated that novice teachers mostly struggled with classroom control problems in their first years of profession.

To sum up, the findings indicated that less than half of the student teachers felt that they were ready for teaching in terms of pedagogical content knowledge, subject knowledge and curricular knowledge. Most of the student teachers had high course scores in their examinations, in practice; this does not help them feel confident in teaching (Watson 2006; Yeşil 2009). In other words, there is a problem in transferring their knowledge to practice. This may mean that they need more assistance and help in their teacher education courses. Teacher education faculty put new emphasis on student teachers development in teaching because student teachers' lack of competence causes them to begin their teaching profession career with problems. When they start their teaching job, if they do not feel themselves secure enough from the beginning, they would not teach in form of the real classroom settings. As a result, this may create much more problems in their careers".

STUDENT TEACHER'S VIEWS ABOUT PROFESSIONAL DEVELOPMENT AND LIFE-LONG LEARNING

Student teacher's views about professional development and life-long learning were presented in Table 2. Most of the student teacher had positive attitudes towards professional development and life-long learning (Table 2). More than half of the student teachers indicated that professional development and life-long learning continue through life time. They state that there is continuity in development and learning after the end of formal education as clearly illustrated by the following statements.

"I think learning will never end" (S6)
"Learning will continue until the end of life" (S1)
"Learning is a permanent process" (S7)
"We have to continuously develop professionally so that our students' are educated according to societies expectation and this will just provided through lifelong learning" (S10)
"Learning will not end" (S12)
"To orientate oneself into an unstable conditions, people in every profession al group should develop themselves" (S8)

"In our changing, developing world to keep in step with life we have to follow technology" (S16)

Therefore, they believe that teachers should focus on professional development and lifelong learning activities. To sum up, the student teachers believed that professional development is continuity of professional learning and teachers should follow innovations and update their knowledge and skills continuously (Intrator & Kunzman 2006).

STUDENT TEACHERS' PROFESSIONAL DEVELOPMENT ACTIVITIES

On the questionnaire, the student teachers were asked the activities that they employed to develop themselves professionally. Majority of the student teachers reported that they were mainly employing "reading" technique as a professional development activity. They stated that reading educational academic books, scientific journals (mainly science and technique), books, educational web pages on the internet as illustrated by the following quotations:

"I am reading scientific journals and books related to my area" (S6)
"I always follow developments from internet and I also look for new activities in internet" (S12)
A few student teachers indicated that they were carrying small investigations through literature about the topic they were interested in or going to teach in real classroom settings in the teaching practice:

"I am doing detailed research for the subjects I am going to teach" (S20)
"I am trying to overcome my needs by making research on the areas that I am interested in and curious about" (S3)
On the other hand two student teachers stated that they were only concentrated on their courses and assignment but not on professional development:

"I do nothing accept the education I am taking at faculty" (S21)
"I have no time to develop myself about teaching profession. I just try to do my homework and research" (S22)
To sum up, majority of the student teachers were more aware of professional development activities. They were mainly using reading activity from different sources. As they are still student teachers they have many assignments and project to be completed, therefore they are trying to learn more knowledge about their courses. As a result "reading" is the main professional development activity for them.

STUDENT TEACHERS' VIEWS ABOUT THE EFFECTIVENESS OF THE FACULTY TO HELP THEM DEVELOP THEMSELVES PROFESSIONALLY

The student teachers were asked to what extent courses they were taking at the faculty help them prepare to teach. According to the findings, majority of the student teachers

TABLE 2. Student teachers' views about professional development and life-long learning

Categories	Students' views
Conscious	*S1: Professional development doesn't develop automatically in current times*
Ability	*S1: I think it is not enough to concentrate on only one ability*
Continuity	*S1: I think learning will never end*
	S2: Individuals should always develop him/herselves in the place where they live
	S5: Individuals should not limit development and learning; he/she should always keep the possibility to learn new things in her/his mind
	S6, S23: Learning will continue until the end of life
	S7: Learning is a permanent process
	S8, S25: Learning will not end
	S9: Knowledge is not a static concept. new knowledge are continuously added to and removed from science
	S10: We have to continuously develop professionally so that are educated our students' according to society's expectation and this will be provided through lifelong learning
	S11: Teaching profession involves being and endless student
	S12, S14: There is no end in learning
	S13: Science and technology course is always in a development in the content so it is necessary to be aware of developments
	S15, S23: Knowledge should be developed in responds to technological developments
	S21: If we want to develop ourselves in teaching profession we should learn new things done continuity
Disposed to and being curious	*S18: Individuals should be disposed to knowledge for being successful*
	S1: Individuals should be curious, and should produce by learning
Opportunity and time	*S1, S22: Enough place and time should be provided*
	S3: Professional development is an event which could take place in time
Practice	*S24: Professional development in Education Faculty should focus on practice not theory*
World view	*S2: Professional development and life-long learning is a world view for me*
Experience	*S3: Experience and interest to environment will effect life-long learning*
Currency	*S4: To follow the content and innovations will take us and our country further*
	S8: We should be open to innovations by being up to date
	S11: Professional development is a process that a teacher is being informed of innovations made in education and renew himself continuously
	S12: To orientate oneself into unstable conditions people in every profession group should develop themselves
	S14: New technological developments should be followed
	S15: There are some limitations for teaching profession in hole life with the knowledge remaining from university
	S16: In our changing, developing world to keep in step with life we have to follow technology
	S17, S25: We should follow developments and should develop ourselves in professional development
	S18: We should have an insatiable desire for knowledge and we should search and make new studies

found the subject courses are insufficient while courses related to educational sciences and teaching are sufficient in helping them prepare to teaching. They stated that in courses related to subject discipline the content is too theoretical and sometimes irrelevant to primary science and technology curriculum that they will follow when they become a teacher. For example; S1 coded student indicated her ides as "detailed courses should be given directed to profession"; S18 indicated as "courses are concentrated on theoretic knowledge".

In addition to this, they indicated that they found less opportunity to practice the concepts and principles they learnt in subject courses. These imply that faculty should focus on the courses related subject like biology, chemistry, physics and mathematics.

On the other hand, student teachers generally expressed positive views about the courses related to educational science and teaching.

"It has very much contribution in educational sciences for our professional development It has very much contribution in educational sciences for our professional development" (S12)
"It is sufficient for being extensive" (S4)

The main reason for their different attitudes towards educational sciences course and subject course might be lecturers as educational courses are given by lecturers who have strong knowledge and skills about teaching, learning and assessment and follow the curriculum closely whereas the others do not have such knowledge and skills and they are only concentrated on the subject discipline. Therefore, it

might be suggested that no matter how all lecturers assigned at teachers training should have pedagogical knowledge for student and skills. Otherwise, courses run by such between who do not have pedagogical knowledge will not be helpful and beneficial for student teachers' professional development.

S1 said that "I don't think it is sufficient. Because they are not trying to complete our lacks, they are teaching us some more difficult and useless concepts. And this means more lack of knowledge". Six of the student teachers thought that education is about concentrating on theoretical knowledge; more application should be made to gain ability. S25 expressed her view as; "I feel myself sufficient in education course but I feel myself insufficient in subject courses. When I start to practice at school I noticed that we aren't taught the knowledge we are going to use in teaching profession. For example; instead of learning quantum physics so detailed we can learn some other courses. I could use the things I learned in optic courses. I think subject courses related to my profession should be increased. Time of the courses like quantum physics should be decreased, they could be taught at physics department".

S4 found the course content as adequate and explained it as: "It is sufficient because we are learning philosophical and psychological dimension of the profession. And this is necessary for development. And we learn physics, chemistry and biology in an extended way so we understand the subjects better."

Fifteen of the student teachers' mentioned about courses in educational sciences as sufficient. S12 says that "Educational sciences courses are teaching them how to use new approaches in an effective way. And I can apply these approaches to all of the new positions by the time". S15 said that "I think educational sciences courses are good enough. I understand it from my school experiences".

STUDENT TEACHERS' VIEWS ABOUT THE CONSTRAINTS FOR THEIR PROFESSIONAL DEVELOPMENT

In the study, the student teachers were also asked what kind of constraint they faced in their profesional development. They listed various factors. The highest ranked factor on their attitudes towards teaching profession. Almost half of them indicated that they were not happy for choosing teaching as a profession. Also, other people's valuing teaching profession as a less independent profession negatively affected the student teachers. Since teaching is considered as less important profession, the student teachers were not encouraged to develop themselves.

The second constraint reported by several student teachers was financial problems. Either the fact that teachers do not receive enough salary they deserve or the student teachers' current financial problems discouraged them on enhancing their professional development. They stated that they could not spend their money on professional development activities as they could only meet their basic needs.

STUDENT TEACHERS' SUGGESTION FOR BETTER PROFESSIONAL DEVELOPMENT

In the study student teachers were asked about their suggestions to provide better professional development. They were advised to write suggestions for faculty administrations, lecturers and new coming student teachers. Regarding faculty administration, majority of the students stated that faculty should redesign teacher education programmes and the content of the courses. They suggested that more practice hours should be added to the programme, irrelevant courses or topics should be abandoned and student teachers' academic needs should be taken into consideration. In relation to lecturers, the student teachers made various suggestions. Lecturers should be fairer, more enthusiastic, tolerant, skilful, and knowledgeable. Their suggestions to the lecturers are similar to Arnon & Reichelb (2007)'s description of the qualities of a good teacher as having a sense of humour, calm, fair, optimistic, humane, principled, and being empathetic. They should also be a guide and model to student teachers as such they should use effective teaching and assessment methods and techniques in their courses in order to show student teachers how these methods and techniques are implemented in practice. Lecturers should be resourceful and can suggest or show the ways to student teachers on how they can develop themselves professionally.

Finally, the student teachers also made suggestions for new coming student teachers about how to develop themselves professionally. First of all, they should decide on whether they are going to do this profession or not. They should develop positive attitudes towards teaching profession otherwise, they should change their route to life and re-enter to OSS for a different job. Also, they should not think that some courses are irrelevant for their profession because every course is important and sooner or later they will benefit from them.

CONCLUSION

The main purpose of this study was to determine science student teachers' views of professional development and lifelong learning and to what extent they feel themselves prepared for being professional, as a teacher. In order to achieve these aims, a survey study, mainly qualitative, using a questionnaire with open ended questions was conducted with twenty five science student teachers at Karadeniz Technical University, Primary Science Education Department.

According to the findings, while student teachers felt themselves insufficient in practicing teaching and subject knowledge, they found themselves sufficient in educational sciences courses. They stressed that the content of the subject courses in the teacher education programme is not parallel to the science and technology content of primary level and most of the subject courses are too detailed. This leads them to memorize lots of things which they think

they will not use in real practice. Also, student teachers believed that as content of the science and technology program at primary level changes continuously, there is no need to memorize everything related to the subject. Therefore, it was suggested that the content and level of the subject courses in the teacher education programme should be parallel to those of the science and technology content of primary level. More emphasis should be given to practical activities; level of content knowledge taught in subject courses should be decreased appropriate to primary school level.

Another issue raised by the student teachers related to their professional development as a teacher is that they had problems in applying their knowledge. Although they had high course scores and enough theoretical knowledge, they had concerns about the implementation of what they have learned. In addition, they stated that they need more opportunities for learning by doing, experiencing and applying. In this manner, increasing the time of school practices might be helpful for student teachers' growing as a teacher. This might be done by changing teacher education program, adding more practical hours into the programme and providing them to be faced with real classroom environments from the first grades. However, this might not be applicable as teacher education programmes are centrally designed by the Higher Education Council. Education faculties do not have the freedom to change teacher education programmes to improve the qualities of their students and to groom them professionally.

Student teachers defined professional development and lifelong learning as continuing processes for development and stated that teachers should be innovative and update their knowledge and skills continuously. In order to develop themselves professionally while in the pre service teacher education, they usually read journals about science and technology, joined into the courses about education, conducted searches on the internet and observed their teachers. In this way, it is easy for them to understand their developmental needs and help them to find ways in improving themselves.

Almost half of them indicated that one of the constraints their professional development is their attitudes towards teaching profession and other peoples valuing teaching profession. Most of them were not happy for choosing teaching as a profession. They felt there is a big constraint for them for improving themselves. The other constraint about the teaching profession is teachers' salaries. They told that a teachers' salary is only enough to meet their basic needs.

Student teachers also had suggestions to their lecturers as to be fairer, more enthusiastic, tolerant, skilful, and knowledgeable and be a guide and model to student teachers in using effective teaching and assessment methods and techniques in their courses in order to show student teachers how these methods and techniques are implemented in practice. They also have suggestions for the new coming students. First is to decide if they really want to do teaching as a profession. This is because having positive attitude is the big part of doing the job in a good way (Rogers 2009). They also suggested student teachers to think that all of the courses that they have taken are relevant for their professional development.

In teacher education programs more emphasis should be put on subject content knowledge because when a student teacher graduated he should have acquire at least the content they are going to teach at school besides different teaching and learning techniques. In relation to this, research on determining teachers' view on life long learning and profesional development can be carried out.

REFERENCES

Arnon, S. & Reichelb, N. 2007. Who is the ideal teacher? Am I? Similarity and difference in perception of students of education regarding the qualities of a good teacher and of their own qualities as teachers. *Teachers and Teaching: Theory and Practice* 13(5): 441-464.

Banks, F., Leach, J. & Moon, B. 1999. New Understandings of teachers Pedagogic knowledge. In *Learners & Pedagogy*, edited by J. Leach & B. Moon. The Open University: Paul Chapman Publishing.

Banks, F. 2008. Learning in DEPTH: developing a graphical tool for Professional thinking for technology teachers. *International Journal of Technology and Design Education* 18(3): 221-229.

Banks, F., Barlex, D., Jarvinen, E., O'Sullivan, G., Owen, Jackson, G. & Rutland, M. 2004. DEPTH – Developing Professional Thinking for Technology Teachers: An International Study. *International Journal of Technology and Design Education* 14: 141-157.

Bogdan, R.C. & Biklen, S.K. 1992. *Qualitative Research for Education: An Introduction to Theory and Methods*. 2nd ed. Boston: Allyn and Bacon.

Bryman, A. 2001. *Social Research Methods*. Oxford: Oxford University Press.

Cimer, S.O. 2004. An investigation into biology teachers' perceptions of classroom assessment in secondary schools in Turkey. The University of Nottingham, School of Education, Nottingham. Unpublished EdD Thesis.

Cohen, L. & Manion, L. 2000. *Research Methods in Education*. New York: Routledge.

Cormier, C.P. 2006. Novice teachers' perceptions of their first year induction program in urban schools. Unpublished doctorate thesis. Office of Graduate Studies of Texas A&M University.

Day, C. 1999. *Developing Teachers: The Challenges of Lifelong Learning*. Falmer Press.

Gödek, Y. 2006. Fen Bilgisi Öğretmen Adaylarının Bilgi Temellerinin Etkili Gelişim Yolları. http://w3.gazi.edu.tr/web/yaseming/yayinlar/7.Canakkale-bildiri%20metni-MAYIS%202006.pdf accessed on...

Gültekin, M. & Çubukçu, Z. 2008. İlköğretim Öğretmenlerinin Hizmetiçi Eğitime İlişkin Görüşleri. *Sosyal Bilimler Dergisi* 19: 185-201.

Intrator, S.M. & Kunzman, R. 2006. The Educational Forum. The Person in the Profession: Renewing Teacher Vitality through Professional Development 71: 16-32.

Krueger, R.A. & Casey M.A. 2000. Focus Groups: A practical Guide for Applied Research, London: Sage Publications.

Kuzu, A. & Becit, G. 2007. Öğretmenlerin Lisansüstü Eğitimde Karşılaştıkları Sorunlar ve Çözüm Önerileri. Eğitim Bilimleri Enstitüsü III. Lisansüstü Eğitim Sempozyumu: 17-20 Ekim 2007- Eskişehir: Bildiriler (s.380-388). Eskişehir: Eser Ofset.

Maykut, P. & Morehouse, R. 1994. *Beginning Qualitative Research: A Philosophic and Practical Guide*. London: The Falmer Press.

Miles, M.B. & Huberman, A.M. 1994. *An Expanded Sourcebook: Qualitative Data Analysis*. 2nd edition. Thousand Oaks, CA: Sage.

Robson, C. 1997. *Real World Research: A Resource for Social Scientists and Practitioner-Researchers*. Oxford: Blackwell.

Rogers, B. 2009. ''Better'' People, Better Teaching: The Vision of the National Teacher Corps, 1965-1968. *History of Education Quarterly* 49(3):....

Shulman, L.S. 1994. Those Who Understand: Knowledge Growth In Teaching. In *Teaching and Learning in the Secondary School*, (edited by B. Moon & A. S. Mayes). The Open University: Routledge London.

Shulman, L.S. 1999. Knowledge and Teaching: Foundations of the New Reform. In *Learners & Pedagogy*, (edited by J. Leach & B. Moon). The Open University: Paul Chapman Publishing.

Tonbul, Y. 2004. *İlköğretim Okullarındaki "Mesleki Çalışma" Ugulamalarının Etkililiği İle İlgili Görüşler*. Eğitimde Yeni Yönelimler Sempozyumu, Tevfik Fikret Okulları.

Walker, A. & Yın Cheong, C. 1996. Professional Development in Hong Kong Primary Schools: beliefs, practices and change. *Journal of Education for Teaching* 22(2): 197-212.

Watson, S.B. 2006. Novice Science Teachers: Expectations and Experiences. *Journal of Science Teacher Education* 17: 279-290.

Yeşil, R. 2009. Sosyal Bilgiler Aday Öğretmenlerinin Sınıf içi Öğretim Yeterlikleri (Kırşehir Örneği), *Türk Eğitim Bilimleri Dergisi* 7(2): 327-352.

URL-1, http://www.mebnet.net/genel-egsis/ogretmenlik-mes. html. 20.05.2008.

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APPENDIX

This study is done for a research. Its' aim is to gather information about your ideas about professional development and life-long learning. We are expecting you to answer all the questions in all sincerity. Thank you for your participation.

Class:
Gender:

1. Do you feel yourself sufficient for performing this profession?
   a. I am sufficient. Which factors provide you to feel yourself sufficient?
   b. I am insufficient. In which subject do you feel insufficient? What are you doing to overcome this situation?

2. What are you thinking about professional development and life-long learning?

3. What are you doing to complete your lackness in professional development and life-long learning?

4. How does professional education and subject courses prepare you for professional development and life-long learning?

5. What are the obstacles in professional development of teachers?

6. Could you make some recommendations for taking a more qualified education?