Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 106 (2013) 2838 – 2843

Procedia
Social and Behavioral Sciences

4th International Conference on New Horizons in Education

The impact of external examinations on high school curricula: perceptions of science teachers

Hüseyin Yaratan[a], Hicran B. Fırat[b]*

[a]*Eastern Mediterranean University, Department of Educational Sciences, Gazi Mağusa, via Mersin 10 Turkey*
[b]*Eastern Mediterranean University, Department of Educational Sciences,Gazi Mağusa, via Mersin 10 Turkey*

Abstract

The exam for Admission to Higher Education (YGS) and exam for Placement for Undergraduate Studies (LYS) are required for admission to universities in Turkey. Yet teachers complain about the inconsistency between the contents of these exams and 12th-grade curricula. This qualitative study aims to analyse teachers' perceptions of the impact of these exams on the content of the science lessons. Using a stratified purposive sampling method, 30 teachers from high schools in North Cyprus were interviewed using a semi-structured interview technique. Content analysis was performed on interview data. Results revealed consistency between the contents of LYS and 12th-grade science curricula but inconsistency between the contents of YGS and 12th grade science curricula, as well as a negative effect on the content.

*Keywords:*external exams; curriculum; high schools; qualitative;content analysis;consistency.

1. Introduction

Every year in the Turkish Republic of Northern Cyprus (TRNC), thousands of 12th-grade students from public high schools or colleges who want to attend higher education programs in Turkey enter the initial phase of the matriculation examinations, which is the Examination for Admission to Higher Education (YGS). Those who score 140 and above take the second phase of these examinations called the Examination for Placement for

* Hicran B. Fırat. Tel.: +90-392-630-2560; fax: +90-392-630-3055.
E-mail address: hicran.firat@emu.edu.tr

doi:10.1016/j.sbspro.2013.12.327

Undergraduate Studies (LYS). Since these examinations provide students direct admission to higher education, they are crucial for teachers as well. Research by Fırat (2013) revealed that, for 96% of teacher-participants, these exams are crucial since students perceive their success on them as the success of the teachers. These matriculation examinations are prepared and administered by the Student Selection and Placement Centre (ÖSYM), which is affiliated with the Board of Higher Education (YÖK) in Turkey. Thus they are external examinations for teachers and students in North Cyprus. Similar to newspapers in England and Wales that publish league tables reporting examination results for each school (Golstein and Thomas, 1996), the media in North Cyprus also publish matriculation examination results and reproach the education system for Turkish Cypriot students' poor results on the YGS and LYS. Similarly, research by Kelecioğlu (2002) revealed discontent with the examination results among teachers and students in Turkey because they perceived inconsistency in the alignment of the YGS and LYS content with the content of school curricula. Kelecioğlu's research also verified nonalignment between the content of the Student Selection Examination (ÖSS) and the grade-12 curriculum.

Yet, in 2002 there was only one stage in the matriculation examination, and the educational system did not implement a student-centred curriculum; moreover the course books were not revised yet. In 2005, student-centred education was first introduced in the six provinces, then in the whole country and North Cyprus. In 2010 the ÖSYM again implemented a two-stage matriculation examination. In 2012 the Turkish Ministry of Education (MEB) revised all textbooks to provide a student-centred education, thus compelling a new study.

This paper concerns secondary education for ages 15–18 and its college and multi-programmed high schools (The Department of Educational Planning and Program Development-DEPPD, 2005) In colleges in North Cyprus, there are programs for those students who want to take matriculation examinations instead of International General Certificate of Secondary Education (IGCSE) examinations or Certificate of Secondary Education (GCE) advanced (A) and advanced subsidiary (AS) levels.

The first stage of the two-stage examination introduced by the ÖSYM in 2010 was called the Examination for Admission to Higher Education (YGS), and the second stage was called the Examination for Placement for Undergraduate Studies (LYS). Included in the first stage, or YGS, were sections on Turkish language, social sciences, mathematics, and sciences, for a total of 160 questions (40 questions in each section). The examination took 160 minutes. The second stage, or LYS, consisted of five tests: LYS1 (mathematics and geometry), LYS2 (sciences), LYS3 (geography 1 and Turkish language and literature), LYS4 (history, geography 2, and philosophy), and LYS5 (foreign languages) (ÖSYM, 2006). Each LYS had varied in the number of questions and duration. In LYS2, there were 90 questions, lasting 135 minutes. This study examines YGS sciences and LYS2.

This study aimed to determine how teachers perceive the effects of the YGS and LYS on the 12th-grade science curricula with respect to content, implementation, and teacher-made assessments. More particularly, the study posed the following research question: How do teachers perceive the consistency between matriculation examinations and the content of 12th-grade science curricula?

2. Method

A qualitative research paradigm was used in this study to select samples, develop data collection tools, and analyse the data. The data was used only to describe and generalize the phenomenon in North Cyprus. The population of this study was science teachers of 12th grades in the multi-programmed public high schools and colleges in North Cyprus. The population did not include science teachers in private schools, fine arts high schools, Anatolian high school, or modern vocational technical high schools. Stratified purposive sampling was used to select samples from each school (Fraenkel & Wallen, 2006; Kuzel, 1992; Miles & Huberman, 1994; Morse, 1994). Participating teachers were required to teach 12th grade and be familiar with the content of the YGS and LYS. About 35% of teachers were purposefully selected for the samples.

The study was conducted from October to May in the 2011–2012 academic year at 16 schools in 5 districts: 4 schools in the Mağusa district, 3 schools in the Güzelyurt district, 2 schools in the İskele district, 4 schools in the

Lefkoşa district, and 3 schools in the Girne district. Thirty-three science teachers were selected, but only 30 teachers could be interviewed, resulting in a return rate of 91%. Among these 30 science teachers, there were 12 physics (10 males, 2 females), 9 chemistry (5 males, 4 females), and 9 biology (2 males, 7 females) teachers. Twenty-four of these teachers taught in public high schools and six of them in colleges.

Data were collected using a semi-structured interview technique (Stewart & Cash, 1985). Two semi-structured open-ended questions were prepared by the researchers and used to collect information about the participants' perceptions of the effect of external exams on curricula. During the design phase, the interview questions were piloted with seven teachers from two different schools in two different regions. The responses of the interviewees were transcribed and analysed, and then the questions were modified to ensure consistency in responses for their reliability (Sanders, 1994, p. 153). Moreover, three field experts were consulted about the content validity of the questions (Sanders, 1994, p. 145).

Consent forms given to teachers included the aim of the study, research questions, and information about the researchers. Appointments were made one or two days before the interviews. The teachers' responses were recorded using an audio recording device to eliminate the possibility of misunderstanding or loss of data. Data were collected from one-on-one interviews at a time convenient to the participants. Interviews were carried out in the respondents' native language, Turkish.

Conventional content analysis technique was used to analyse the data (Marshall & Rossman, 2011; Miles & Huberman, 1994). Data were analysed based on the concepts driven by the semi-structured open-ended questions. These concepts comprised the codes in the analysis (Miles & Huberman, 1994, p. 56). For research findings, teacher responses from interviews were often quoted. The names of the interviewees were not used in the direct quotations; instead, code names—such as T1, T2, T3 for teachers, C for colleges, and P for public high schools—were used. In addition, the frequency and percentage of repeated comments by the teachers and students were calculated and expressed as frequencies and percentages in the data analysis.

3. Findings

Teachers were asked the following two questions:

1. What do you think about the consistency between the content of the curriculum and the content of the matriculation examinations?
2. How do you regulate the consistency between the content of the curriculum and the content of the matriculation examinations?

Content analysis was performed on the teachers' responses related to the consistency of the exams' content with that of the 12th-grade curriculum in order to answer Question 1.

Sixty-seven percent of the science teachers perceived consistency between the contents of the YGS and the 9th-, 10th-, and 11th-grade textbooks, as well as between the contents of the LYS and the 12th-grade physics, chemistry, and biology textbooks. They said that a great degree of consistency between the content of the test question and that of the textbook indicated consistency. Most of them noted a significant correspondence in content between the YGS and 9th-, 10th-, and 11th-grade science textbooks, but very little match between the YGS and 12th-grade science textbooks. They thought the content of the LYS corresponded significantly with the 12th-grade science textbooks. The following interview excerpts are examples of such opinions.

> TP16: Ninety percent of YGS covers 9th-, 10th, and 11th grade topics, so it largely overlaps with them. LYS covers 12th-grade topics at the same rate. But the YGS 12, I can say that the YGS's content coverage of 12th-grade topics is very low.
>
> TP14: Now, 9th- and 10th-grade topics are mostly in the YGS. LYS has topics of 11th and 12th grades. Because of that, in 12th grade, students forget the topics they studied in the 9th grade. That's why they

> start to go to *dersane*[†], because they've already forgotten the topics studied in the 9th and 10th grades. Plus, we hardly have time for revisions. I think YGS content overlaps with 9th- and 10th-grade content, and LYS content with 11th- and 12th- grades content mostly.

On the other hand, 23% of the science teachers perceived significant inconsistency between the contents of the YGS, LYS, and the 12th-grade science textbooks. They thought that the content of the textbooks was not aligned with the contents of the tests. The test topics were from various grades and did not include a large amount of the topics in the 12th-grade textbooks, which was the reason they perceived inconsistency in the contents. Transcript excerpts elaborate on these observations:

> TP12: Till two, three years ago, they were entirely consistent, corresponding to the curriculum. But the current books, they changed them, you know, these newly released books. I do not know whether you've checked their contents or not, but if you looked at the content, lots of differences occurred. These books in 12th grade are not sufficient. The books we used 2–3 years ago were much better. For me, the new books, in terms of content, are inadequate. They do not match the exams. What questions will be on the exam is another mystery.
> TP4: If I'm not mistaken, this system started two or three year ago. Not improved yet. Thus, the first stage, if we consider the first stage of the exam [YGS], topics do not include the 12th-grade topics. In the second stage, there are a couple of topics from 12th grade, but not all. For example, in the book there are at least 20 topics, but they ask about only 3 of them. When you check, you see that they ask at least 10 question from the same 3 topics. However, these 10 questions can be on 10 different topics. There are also questions that are not part of the 12th-grade curriculum, so we have to review them in class. Because they were from the books of the previous years.

Ten percent of the science teachers were indecisive about whether there was consistency or inconsistency between the contents of the tests and the textbooks. They said that there was no clear distinction among the topics. According to them, some of the topics were common in all high school science textbooks. There were questions on the YGS or LYS from these topics. TP8 said,

> There is such an issue, you cannot distinguish some topics as this is 10th-grade topic and this is 12th-grade topic. They are common topics. You can find them in different grades' textbooks. You have it in 9th grade and you have it in 12th-grade textbooks as well. So can we say, study this for the YGS and study this for the LYS? We can't. So we advise students to study all for both stages of the exams.

The content of the participants' responses were further analyzed to explore how teachers regulated curricula for consistency with exams and found that 7% of the science teachers said that they could not cover all the topics in the textbooks because of limited contact hours. They said that the many official holidays during the academic year made for a shortage of time. Moreover, 12th-grade students are given a 30-day official leave by the MEB just before these examinations. As one teacher (TP13) noted, "We can't finish the books. A lot of things to cover, but not enough time for all." Another (TP3) said,

> The length of academic year is not enough to cover all. We have many holidays. We have Turkish Cypriots' holidays, we have Turkey's holidays. In addition to this, the directorate of secondary education gives a 30-day official leave to 12th-grade students to stay at home and study for these exams. Then how can we finish the book?

[†] Institutions providing private education to prepare students for external examinations are called *dersane*.

Ten percent of the teachers said they follow the order in the book, never make any addition or deletion to the content, but put more emphasis on the chapters and topics that were more likely to be asked about in these exams. Eighty-three percent of the teachers said that they change the order of the chapters of the topics according to their probability of being covered in the examinations. They said that they gave priority to the topics that had a high probability and covered those first. Some said they did so upon the students' request. When students insisted, they focused on the topic(s) asked in the previous examinations. The following teachers explain this adaptation:

> TC27: There are important parts. If no question was asked from that part in the [previous] exam, students don't study that part. There are parts I think are important, so I give priority to them. So the exams are limiting us. We focus on the topics they ask about in the exams. Students also put pressure on us. They don't want to listen to or learn anything that is not asked in these exams. We have no other choice. To control the class, we do what they want.
>
> TP23: We still continue with the old method. We look at the exam questions. For example, questions such as were asked last year, and accordingly we adjust our methods, accordingly we arrange the topics. So close to the time of the exam, we base our curriculum on the YGS and LYStoward the exam. We look at the questions and make our syllabus. So, for example, together with colleagues we decide which topics will be the focus, which ones will be skipped, and which ones will not be covered at all. Yet we do this every year because they can change the topics in the exams. But this rarely happens.

Another way teachers regulated the curricula was to abolish the laboratory activities of these lessons. About 94% of science teachers stated that they did not do lab work because of time constraints. Another reason teachers said they stopped including laboratory activities was the lack of laboratory materials and instruments and the bad conditions of laboratories in public high schools and colleges. Only about 6% of science teachers claimed that they do laboratory activities in public high schools, but no more than twice in an academic year. As one participant (T20) explained,

> The questions on the test were not about labs. They are all about theories. Why should we do it then? We don't have enough time during the academic year to cover all. We finish schools at noon, at one o'clock. No school in the afternoon. If we try to do labs as well, then we cannot finish the book.

Another teacher (TP21) added,

> We do it but frankly we do one or two in an academic year. Why? We don't have enough materials, equipment. Most of the furniture and equipment were broken. Or you do one and all students watch. It should be hands-on, don't you agree?

4. Discussion and Conclusion

It is primarily teachers who make decisions about curricula content and the length of time to spend on that content (Porter, 2006). According to Posner (2004), several studies revealed a close connection between instruction and standardized tests (Madaus & Kellaghar, 1992; Stodolsky, 1988). For that reason, teachers might be forced by the students and the parents, or feel obliged, to teach toward tests since admission to higher education depends on scores on these tests (Posner, 2004). Moreover, such a connection between testing and learning was addressed by a number of studies in the assessment literature; Alderson and Wall (1993) used the term "wash-back effect" to refer to this impact of the tests on teaching. In this study, the perceptions of science teachers revealed that external exams had this wash-back effect on teaching, as teachers said they emphasize the content likely to be covered and eliminate or skip the content that is not. Moreover, they not only adjusted accordingly the content of the instruction but also contact hours. For example, they abolished the laboratory

studies of the science lessons. Mamlok-Naaman and Barnea (2012) cited a number of studies emphasizing the benefits of laboratory activities in science education, namely, "facilitating the attainment of cognitive, affective, and practical goals" (p. 49). However, the findings in this study revealed that the laboratory activities of physics, chemistry, and biology lessons were abolished. Considering the benefits mentioned by Mamlok-Naaman and Barnea, re-addition of these activities to high school and college science curricula is highly recommended. According to Posner (2004), teachers most of the time experienced the dilemma of coverage versus mastery of the contents. This study's participants mostly sacrificed mastery (as well as laboratory studies) for the coverage of content. More emphasis was placed on "knowing that" (the subject matter) instead of "knowing how" (the skills) (Ryle, 1949).

References

Alderson J. C., & Wall, D. (1993). Does washback exist? *Applied Linguistics, 14*, 115–129.

Department of Educational Planning and Program Development. (September 2005). *The Cyprus Turkish Education System*. Retrieved January 24, 2011, from http://www.mebnet.net/sites/default/files/CypTurEduSys.pdf

Firat, H. B. (2013). The impact of external examinations on high school curricula. Unpublished PhD thesis, Eastern Mediterranean University, Famagusta, North Cyprus.

Fraenkel, R. J., & Wallen, E. N. (2006). *How to design and evaluate research in education* (6th ed.). New York: McGraw Hill Companies.

Golstein, H., & Thomas, S. (1996). Using examination results as indicators of school and college performance. *Journal of the Royal Statistical Society, Series A (Statistics in Society), 159*(1), 149–163. Retrieved January 24, 2011, from http://www.jstore.org/stable/2983475

Higher Education Council Student Selection and Placement Center (ÖSYM). (2006). *Selection and placement of students in higher education institutions in Turkey* (5th ed.). Retrieved December 27, 2010, from http://www-db.in.tum.de/teaching/ws0708/hsufg/oss.html

Kelecioğlu, H. (2002). The point of high school students on university entrance examination and effect of this examination on their learning. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 23*, 135–144.

Kuzel, A. J. (1992). Sampling in qualitative inquiry. In B. F. Crabtree & W. L. Miller (Eds.), *Doing qualitative research: Research methods for primary care.* (pp. 31–44). Newbury Park, CA: Sage.

Mamlok-Naaman, R., & Barnea, N. (2012). Laboratory activities in Israel. *Eurasia Journal of Mathematics, Science and Technology Education*, *8*(1), 49–57.

Marshall, C. & Rossman, G.B. (2011). *Designing Qualitative Research* (5th ed.). London: Sage Publications.

Miles, M. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.

Morse, J. M. (1994). Designing funded qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

Porter, A. C. (2006). Curriculum assessment. In J. L. Green, G. Camilli, & P. B. Elmore (Eds.), *Complementary methods for research in education* (3rd ed.). (pp. 141-159) Washington, DC: American Educational Research Association.

Posner, G. J. (2004). *Analyzing the curriculum* (3rd ed.). Boston, MA: McGraw-Hill.

Ryle, G. (1949). *The concept of mind*. New York, NY: Barnes & Noble.

Sanders, J. R. (1994). *The program evaluation standards: How to assess evaluations of educational programs* (2nd ed.). London: Sage Publications.

Stewart, C. J., & Cash, W. B. (1985). *Interviewing*. Dubuque, IO: Brown Publishers.

Stodolsky, S. S. (1988). *The subject matters: Classroom activity in math and social studies*. Chicago, IL: University of Chicago Press.