

The Importance of Physical Education Teachers in Germany: Theoretical and Educational System Considerations of the Concept of Profession

Author's Contribution

- A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

Rolf Schwarz

Pädagogische Hochschule Karlsruhe, Germany

Key words: profession, teacher education, importance and acceptance of physical education teachers

Abstract

The article examines different aspects of the importance of physical education teachers in Germany. The so called “sociology of professions” that has become the predominant theoretical perspective in sport pedagogy on this matter will be contrasted and completed with empirical data from the German educational policy as well as ideas from education theory.

It is highlighted that different values of the participating protagonists in this discussion lead to different types of understanding the importance of physical education teachers, depending on their specific system logic. As a result, the acceptance of an occupational group cannot automatically be equated with its importance. Finally, the pessimistic theoretical system view on physical education teachers as a profession at stake will be relativized by redefining the socially highly relevant value of health. Using the example of health as a central value for society that is not only processed by the medical system, the author pleads for an offensive communication about the preventive potential of physical education teachers concerning health education to prove their status as a profession.

Word count: 4047**Tables:** 1**Figures:** 4**References:** 33**Received:** September 2011**Accepted:** September 2011**Published:** October 2011

DOI: 10.2478/v10131-011-0021-5

Address for correspondence

Jun.-Prof. Dr. Rolf Schwarz

Bismarckstraße 10, 76133 Karlsruhe, Phone: 0049 – (0)721/925-4625, e-mail: rolf.schwarz@ph-karlsruhe.de

Introduction

Man needs physical activity – but do we thus need sports and physical education at school with teachers accordingly? Answering this question means clarifying fundamentally the importance of physical education teachers¹ in today's German society. Because only if there is an accepted cultural value in society that is worth being passed on to next generations, a distinct school subject can claim legitimization and legitimacy. Otherwise academically long-term educated PET with an income above average cannot successfully be mediated to society [1,2].

Thus the importance and the sheer existence of PET depends on their contribution of conserving or innovating knowledge, expertise and accepted values to the society. The concept that implies this crucial relation systematically is called profession. "Professions are – in the system theory – understood as a highly accepted job because they are significantly involved in generating the performance of a system. For this reason they are the most stable form of established jobs." [3]. The logic behind is the following: if the analysis to be a profession turns out to be positive, the great importance of PET is determined at the same time. Labelling PET as a profession theoretically results in minimizing the danger of it being replaced by other stakeholders in the field of physical activity such as sport coaches. But exactly this discussion has become a new dimension in Germany for the last ten years, as politicians identified non-academic sport coaches from common clubs to be adequate alternatives to graduated PET, the latter even to be abolished. Despite the affiliation to the occupational group of teachers, the great importance of PET is not established automatically. On this account one may ask how important the PET are in general.

The present article gives both answers from the societal and school-political plus the theoretical system point of view according to Stichweh [4,5], Cachay & Thiel [6] and Kastrup [3]. The considerations will coalesce with an education theory-based proposal not to strain the concept of a profession disproportionately but to redefine PET competencies by means of offensively communicating their distinct potential. The essential question is not how PET manage to preserve their status as an assumed profession – on a higher and more honest level we need to ask ourselves what the actual contribution of PET to society's prosperity is or may be: are PET able to serve essential societal values distinctively?

The difference between importance and acceptance of occupational groups

1. Societal importance

The importance of somebody or something is understood in this examination as interpretations, assessments and constructions by individuals how momentous the effect of a phenomenon on and the consequence to oneself is. In this sense the importance of someone or something is basically subjective, emotionally based and temporary. Importance is always – no matter if aware or unaware – attended by a value-based judgment whether oneself is affected and in which quality. Alongside this, standards are applied that disclose a personal attitude rather than an objective analysis. As an example we can cite the amount of occupational groups that are considered to be prototypes within professions: medical doctors/physicians, lawyers, clergymen and teachers. Compared to their number teachers are the biggest profession in Germany with 670,000² employees among the above listed, teaching at general public schools [7]. Furthermore, there are 333,600 doctors/physicians [8], about 287,000 active lawyers [9] and 36,600 active clergymen from both denominations, Catholics and Protestants [10,11]. Teachers consequently represent more than the other listed professions altogether. From a quantitative perspective one may assert that the teachers' profession must be one of the most important jobs in

¹ Physical education teachers: PET.

² In addition there are 110,000 teachers at schools providing vocational education ("Berufsschulen"; "Berufsfachschulen").

Germany in accordance with the relation: the more teachers, the more important they are. Actually, this does not match the so called ‘job-prestige-scales’³ e.g. the annual Allensbach prestige-scale [12]. Answering the question which occupational group they appreciate most within 17 items (multiple answers; N=904) the German respondents among the common population clearly stated medical doctors/physicians to be most respectable (78%). Primary school teachers are merely in the fourth place (33%) even after clergymen (39%). Lawyers are in the midfield with 27%. As a very interesting side effect, the study did not only collect data from primary school teachers but from secondary school teachers (“Gymnasium”) as well. Only 14% show appreciation for higher educating school teachers and a relative contempt on the other hand. Hence there is a gap within the different types of teachers in Germany according to the type of school and apparently a subtle printout of how credible their contribution fits the societal values. The question that remains is whether the differentiation between physical education teachers and e.g. teachers of mathematics shows the same direction. To put it straight: is the type of school responsible for the little appreciation or the school subject? Allensbach did not explore this question and if so, it would have required a different type of question.

The metatheoretical reason is that Allensbach did not ask for the measurable effect the teacher’s work has on the prosperity of the German society (generating and matching the required values of a system) but simply investigated the subjective feeling of reputation. Allensbach’s interest was not to find out whether mathematics or physical education makes a more valuable contribution to German societal prosperity, but to find out a general grade of esteem the different types of profession have. The crucial difference is that this sort of importance simply expresses the sympathy, approval and compliance with the respondents’ beliefs. In people’s minds there may exist a construct of popularity different professions enjoy (or not), but this does not necessarily mean that teachers, especially physical education teachers, objectively contribute to Germany’s welfare. A similar but in a certain aspect more distinguished study points out the difference (Fig. 1).

The noticeable point of this study [13] firstly is that primary school teachers are assessed second best with 20% out of ten occupational groups. Besides, in Berlin-Brandenburg e.g. the number of primary school teachers within all teachers is the highest (35.1%, N=9,698) [14]. Hence the biggest group of teachers obviously finds itself highly appreciated by the German society. That causes a respectable appraisal in a quantitative sense. Secondly, the respondents have an 22% aversion to the same primary school teachers which is the fifth worst rank. How does this fit together? If we have a close look at the data, primary school teachers along with cleaners, farmers and street sweepers (see dashed rectangles in Fig. 1) belong to the type of jobs that are considered to be challenging, exhausting, dirty or putting one’s health at risk. That takes the German society’s hat off to the jobs mentioned, because – on the other hand – the respondents do not want to carry out the disliked duties of e.g. street sweepers. In other words, the prestige of the above occupational groups primarily depends on the morality of their work comprising the respect the population demonstrates for these groups. In fact, it does not depend so much on the objective importance for societal prosperity in the sense of an empirically based output analysis. Most of the German citizens simply do not know what the contribution of a street sweeper to e.g. the gross national product de facto is. But what they subjectively perceive is that street sweepers are directly important for their daily life: the abolishment of street sweepers may lead to the concrete observation of even more dirt on our roads; but to abolish e.g. the politicians, who are shown the second worst appreciation in the study above, would negate the legislative power in our society – a vision that would end up in sheer anarchy and chaos in such a complex system as the German society. To put it straight, politicians are shown the second worst appreciation among ten occupational groups and would gain little importance in accordance with public opinion. Actually, their effect on the society’s prosperity is by far higher than the contribution

³ “Berufsprestigeskalen”.

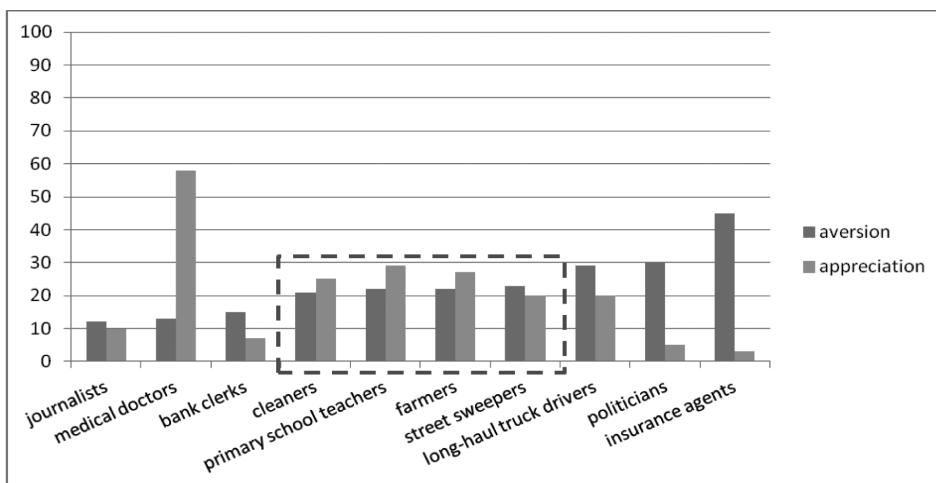


Fig. 1. Appreciation and aversion towards certain occupational groups (10 items) in comparison (N=1,000)

street sweepers make. With reference to this crucial differentiation we may state that the importance of an occupational group explored by a questionnaire can find personal associations, subjective values, temporary opinions and, last but not least, prejudices. Anyhow it does not allow scientifically valid statements of the objective effects on society, neither structurally nor developmentally.

The difference between subjective appreciation (and therefore acceptance) and the objective effects can be empirically pointed out in terms of a distorted perception: "The moaning about the lack of quality in teacher education results from the massive societal importance school teachers and their education have." [1]; and this does not necessarily have anything to do with empirical facts as the following study exemplifies. From the perspective of German parents of school-aged children we learn that 35% of the respondents primarily wish to get a better primary school teacher education and accordingly nearly 48% for secondary school teachers (N=436) [15]. The reasons are – as long as the parents are convinced – that teachers cannot assert themselves (20%) and can only badly take criticism (21%). Moreover, they are considered to have too much leisure time (15%), do not deal fairly with school children (13%) and are not up-to-date (11%). The punch-line is: if we ask parents who do not have school-aged children (N=2,262) exactly the same questions, the results are even worse (Fig. 2). This simple comparison shows that the soci-

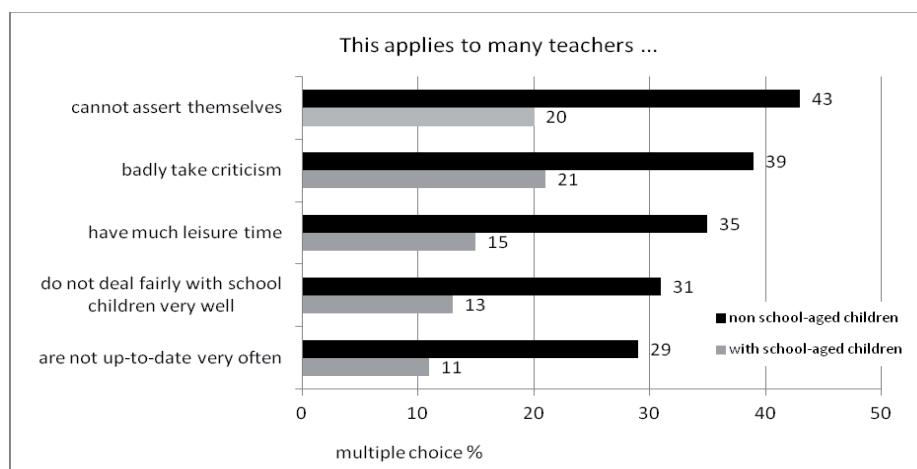


Fig. 2. Parents' assessment of teachers' engagement and quality of teaching – with school-aged children (N=436) and non-school-aged children (N=2,262) in comparison

etal importance of somebody or something rather has to do with directly experienced *emotions* than with ascertainable but not concrete data, especially if one's own children are affected.

How seriously shall a sport scientist or scientist for teaching PET take the assessment of the public concerning this topic? In a socio-political sense we may not underestimate such studies insofar prestige scales and public assessments on teachers' quality have effects on the opinion of education politics, meaning the politicians and their decisions. Despite the question how big the factual importance of PET to the German society is, very often the political importance is subject to votes and the current atmosphere – "Wess' Stimm ich nimm, dess' Lied ich sing."⁴ For this reason looking at the politicians' appreciation of PET is essential in terms of the further existence of German sport, school sport and PET.

2. Educational and school-political importance

"In contrast to the high societal status sport in Germany has, the role of physical education at school is small" [16]. We can emphasize this statement on many counts: the "Deutscher Olympischer Sportbund" (DOSB) with its 27.6 million members is one of the biggest sports organizations in the world [17]. Moreover, sport contributes to 1.7% of the German gross national product with around €35 billion (projection for the year 2011) [18, 19, 20] and to 4.6% in the EU [21].

The German federal government (Ministry of the Interior) is responsive to this data with its "sport report" [22] in which violence prevention, integration of migrants, general political education, health and the diagnostics plus support of sports talents are considered to be dealt with successfully by the so-called "organized sport" (sport in organizations outside school). Using the example of integration, the federal government allocates 5 to 6 million € every year. One thing the sport report does not mention at all is physical education and its potential. Indeed the concepts of "elite school of sport" and their contribution to the possible outcome in the Olympic Games are explicated. Yet, the above mentioned report remains open as to how physical education at general public schools can serve the needs of the German society in terms of the important societal fields (socially highly relevant values) [4, 5].

Quantitatively the sport report does not belittle the obvious importance of physical education within the group of school subjects. In terms of the number of lessons to be taught at school physical education takes up one of the greatest parts. Only the subjects German, Mathematics and – depending on the school's profile – the chosen foreign language (e.g. English, French, Spanish) provide more lessons. Furthermore, physical education as a compulsory subject for all classes at general public schools tightens its assumed importance. This fact is also reflected in the corresponding number of graduated PET who actively teach at schools. For example, in the federal state of Berlin-Brandenburg (2009/2010) among all teachers there were 12.5% PET, which is the fourth highest part [14]; Bayern (Bavaria) and Bremen equally correspond to that data. In addition, physical education is always on top when the subject's popularity is explored mainly even if the variables such as sex or migration are taken into account [23, 24, 25]. Last but not least, the examined governing bodies of the particular school consider the acceptance of PET within their teaching staff mainly as homogenous (83%: "no difference in acceptance to other colleagues") [26]. This is the only positive aspect.

The reverse side is that the compulsory 3 to 4 weekly lessons – depending on each federal state – are in fact only implemented in the number of 2 to 3 lessons [26]. This data corresponds to a subtle negative trend in education and school politics to cancel physical education in favour of e.g. Mathematics, when it is at stake. Other examples of this negative trend are: in 1999 abolishment of Physical Education as a compulsory examination subject in Germany's biggest federal state of Nordrhein-Westfalen; in 2000-2005 outsourcing of Physical Education from schools providing vocational education in Hamburg into sport clubs (sport coaches in place of PET); in 2003/04 the "Hamburger Labour Time Model" was introduced, according to which PET got reck-

⁴ The original saying goes: "Wess' Brot ich ess, dess' Lied ich sing" or "He who pays the piper calls the tune."

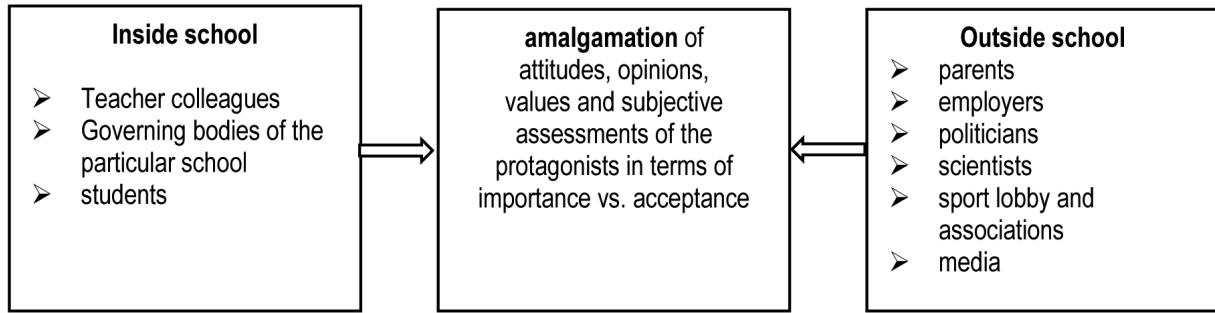


Fig. 3. Importance of PET depending on the different participants

oned to be worth the factor 1.25 whereas teachers for German and Mathematics got reckoned to be worth the factor 1.9, which is in fact much higher; in 2006 imminent abolishment of the professorship for sport pedagogy in Bremen and, therefore, the end of education of PET. In 2007 the city of Nagold also considered outsourcing physical education from schools into sport clubs; in 2007 the „Free Gymnast Association of Freiburg“ founded its own primary sport school with sport coaches educated by that organisation.

This exemplary list can be drawn even more pessimistically in terms of educational governance. Neither the big and popular comparative studies of PISA or TIMMS have examined physical education at all, as it was not supposed to be of any interest, nor did the assigned commission (SPOKO) of the Standing Conference of the Ministers of Education (KMK) come to a significant arrangement [27]. Which measurable results physical education consequently can or should deliver is simply not clear. How can be clear then what the factual importance of PET for next generations and therefore the prosperity of German society is?

If we summarize all observable indicators for the importance of PET in literature on education and school politics, we find 10 recurrent variables such as the duration of education (the longer educated at university, the more important), the level of academic quality and the degree of the scientific education of PET (the more scientific, the more important), the income (the better paid, the more important), the number of school lessons to be taught weekly (the more lessons a subject is taught, the more important), the relevance of the marks in order to get through to the next class, the existence of marks at all (the student's performance which is not marked makes the subject irrelevant), the acceptance and quality of PET with regard to other teachers, the question whether physical education is compulsory or optional, the question whether physical education is a main or a subsidiary subject and finally, whether it is a qualification for future jobs, such as e.g. physics to become an electrical engineer (physical education to become a football star?).

As normative requirements by different protagonists in the discussion about how important the presumed profession of PET is (Fig. 3), the extracted indicators indeed have an opinion-leading character. But possibly they are of little consequence to the factual impact of PET on the prosperity of the German society. The theoretical system perspective promises to give profound answers.

Professions and their importance from a theoretical system perspective

Based on the assumption that the factual importance of a school subject depends on its contribution to the prosperity of a society, it has to be comprehensible if any – and in such a case which – distinctive contribution is made. So far the German sport pedagogy, and therefore phys-

⁵ In spring 2008 the development plan No. 5 was implemented by the university board in Bremen meaning the definite cancellation of the professorship for sport pedagogy. Against this background, there is no education of PET in Bremen at the moment.

ical education at school, has given itself a double assignment in a normative sense: (1) supporting the development of individuals, called "education by sport" and (2) introducing to and preparing individuals for the sport culture, called "education towards sport". In the shape of the *double assignment of physical education* it implements the specific education assignment of the German federal states' school laws (§1), but only theoretically. If we check the education theory up on physical education reality that is to say the "education towards sport" in the face of measurable knowledge about the sport culture and/or other cultural values and expertise, the hopes and assumptions of education theory diverges from empirical data. Responding to the question how important each subject is on the one hand for the overall cultural knowledge or world knowledge respectively and how important it is on the other hand to manage everyday life individually, physical education is the worst subject to teach the overall cultural knowledge as far as the students are concerned. In students' opinion physical education only manages to realize their personal everyday management, e.g. to be fit, to be more attractive, etc. (Fig. 4).

This rather disillusioning data can be qualified by Hentig's consideration [29] that PET do not teach the thing called sport but the students and reminds us of the etymology of the term "sport" which is derived from the Latin *deportare* and the French *de(s)porter*, meaning to amuse oneself. It was therefore an activity to celebrate the easiness of everyday life and the culturally accepted value of easy-going, at least by the upper classes. This quotes a rather decadent benefit for the society and definitely does not meet the expectations of the German "Bildungsrat"/"Wissenschaftsrat" which define the basic tasks of a teacher to pass knowledge, values and skills on to next generations [30, 1]. In the case of PET that would be e.g. the history of the Olympic Games, physiology and anatomy of human beings, scientific principles of training, healthy nutrition in sport, etc. On the contrary, the required tasks of a PET rather shift from "hard skills" to "soft skills" such as "knowing how to teach children good social behaviour" in order to improve their chances of participating in the context of sport outside school. In this sense, PET may become experts on social relations.

At this point theoretical system considerations disagree in some respects. In order to provide reliable and valid information on how successful and therefore socially relevant the teacher's engagement in social education within sport lessons is, one has to be able to measure the changes in attitudes and social behaviour. This is simply impossible as effects of education can basically be detected only in the long run and the variables alongside this process can hardly be determined. Especially due to the autopoiesis and the psychological complexity of living systems

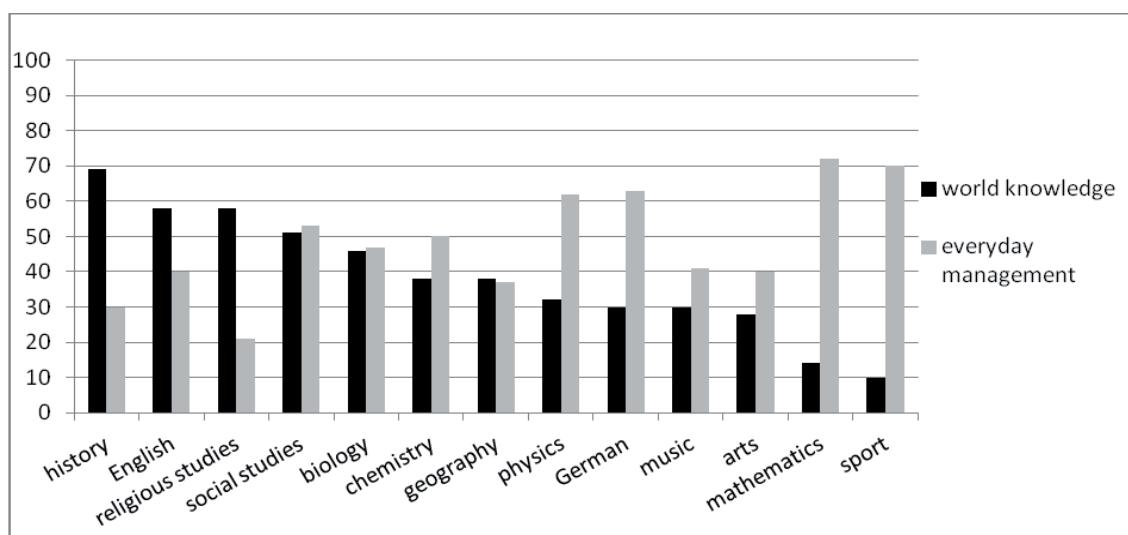


Fig. 4. Importance of each school subject for the student's own world knowledge and everyday management (N=751, secondary school children, classes 8-10, data rounded) [28]

there is no such thing as linear and precise causal evidence [32]. Technologies that provide evidence of a direct effect of teaching on the social behaviour of school children still do not exist. Even a PET cannot make up for the “technological deficit” [33, 34] of education theory. If graduated PET possibly can be replaced by non-academic coaches, their abilities to improve social behaviour are limited and the distinct effects are unproven; and finally, their contribution to students’ world knowledge is rather little. As a consequence, which essential competencies do they teach at all?

Against this background, Kastrup’s certain doubts [3] as to the professionalism of PET are understandable. With respect to Stichweh [4, 5] and Cachay & Thiel [6], she examines the occupational subgroup of PET in terms of its accordance to four characteristics of a profession: (a) processing a central value for society, (b) processing under certain rules and system programmes, (c) processing face-to-face, (d) occupying a dominant role in terms of the (d1) expert-layperson-gap and (d2) controlling the role of the interaction partner (here: school children). Especially the first criteria can point out the difficulty to define PET as a profession, that is to say to fulfil a central system function of the society. The main socially relevant values and challenges with a high appreciation are defined by Stichweh as health, jurisprudence, religion/spiritualism and education [5]. Their existence and development depends on the steady differentiation into functional subsystems. The main system logic determines the system’s way of processing each central value and its general difference. According to the system logic the participants orientate themselves. In the medical subsystem the protagonists are assigned to the binary code healthy/fit vs. ill on the basis of curing diseases (Tab. 1). In consequence, you are either healthy or ill; nothing in between.

PET undoubtedly belong to the education system. However, they also belong to the medical system as it is the fundamental assignment of school in Germany to cover health issues such as drug prevention. In this sense, they deliver a central good to the medical system. Still, they are not alone with this. The traditional *profession par excellence* since the Age of Enlightenment coping with health problems has been the medical doctor. It is his expertise that is trusted in. If we have a bad cold we do not visit our children’s PET to ask them for remedy: a plumber does not bake bread, a butcher does not say the mass and a teacher does not cure health problems – it is the doctor’s business. The functional and therefore professional monopoly lies in the hands of the medical doctor in terms of the central value health. Furthermore, kinesiotherapists, physiotherapists, body therapists, etc. compete against PET in solving health problems. This is the reason why Kastrup assumes the PET not to be an essential part of the health system (meaning not important) and determines a lack of professionalism as long as PET are supposed to deal with health as their most important task. In consequence, the system theoretical equation goes: lack of professionalism means little system importance (here: health system). Actually, there is a lack of consequence in Kastrup’s logic as the following shows.

As long as we define health as the absence of a disease and health to be the sheer opposite of disease then and only then is this binary logic valid. Because if instead we look at health to be the maintenance, consolidation and strengthening of existing resources, the processing of

Tab. 1. Functions and general differences of subsystems of society

Name of system and general distinction	Function(s)
economy: have vs. not have	Future care with limited resources
science: know vs. not know	Production of verity
politics: powerful vs. powerless	Production of collectively binding decisions
medicine: healthy/fit vs. ill	Curing diseases
jurisprudence: right vs. wrong	Production of stable and reliable expectations
education: teachable vs. not teachable plus better than vs. worse than	Making the next generations sociable by knowledge, skills and values i.e. teaching and assessing others

this central value turns into a completely different system function: therapy and rehabilitation do not solely solve the problem anymore but prevention and prophylaxis. Why curing somebody afterwards when you can avoid getting ill in advance? PET are almost predestined for this. While medical doctors and therapists' intervention is delayed, the PET care for all school children and therefore everybody of the next generation to stay healthy. School in Germany is compulsory for all 6 to 18-year-olds, which definitely provides a quantitative monopoly for PET to a societal extent. The only thing PET needed qualitatively was scientific knowledge and expertise for an attentive and anticipating handling one's own body and mind. The question whether curricula of PET education in Germany deliver such an expertise is by far a problem on its own.

References

1. Wissenschaftsrat. Empfehlungen zur künftigen Struktur der Lehrerbildung [Recommendations for the future structure of teacher education]. Köln: Wissenschaftsrat; 2001.
2. Schwarz R. (Neuro-) Kasuistische Sportlehrerbildung – Von Fällen des Sportunterrichts zum Modell pädagogischer Konsonanz: Lehrer werden von Fall zu Fall [Neuro-Casuistic Education of Physical Education Teachers – How to become a teacher case by case]. Hamburg: Czwalina; 2009.
3. Kastrup V. Der Sportlehrer als Profession [Physical education teacher as a profession]. Schorndorf: Hofmann; 2009.
4. Stichweh R. Professionalisierung, Ausdifferenzierung von Funktionssystemen, Inklusion. Betrachtungen aus systemtheoretischer Sicht [Professionalism, differentiation of functional systems and inclusion from a system theoretical point of view]. In: Dewe B, Ferchhoff W, Radtke FO, editors. *Erziehen als Profession. Zur Logik professionellen Handelns in pädagogischen Feldern*. Opladen: Leske + Budrich; 1992, 36-48.
5. Stichweh R. Wissenschaft, Universität, Professionen. Soziologische Analysen [Science, university, professions]. Frankfurt a.M.: Suhrkamp; 1994.
6. Cachay K, Thiel A. Ausbildung ins Ungewisse? Beschäftigungschancen für Sportwissenschaftlerinnen und Sportwissenschaftler im Gesundheitssystem [Education for the uncertainty? Chances on the job market for sport scientists]. Aachen: Meyer & Meyer; 1999.
7. Statistisches Bundesamt. Lehrkräfte an allgemein bildenden Schulen im Schuljahr 2009/10 [Teachers at general public schools]. <http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Content/Statistiken/BildungForschungKultur/Schulen/Tabellen/Content100/AllgemeinbildendeSchulenLehrkraefte,templateld=renderPrint.psml> 2010a. Accessed on 7th October 2011.
8. Bundesärztekammer. Deutsche Ärztestatistik zum 31.12.2010 – Diagramme und Tabellen [Statistics on German doctors]. <http://www.bundesaerztekammer.de/specialdownloads/Stat10Abbildungsteil.pdf>. Accessed on 7th October 2011.
9. Statistisches Bundesamt. Anzahl der Juristen in Deutschland [Number of lawyers in Germany]. <http://www.destatis.de/jetspeed/portal/cms>. Data collected by letter of enquiry on 27th August 2010.
10. Deutsche Bischofskonferenz. Katholische Kirche in Deutschland: Statistische Daten 2010/11 [The Catholic Church in Germany: statistics]. http://www.dbk-shop.de/media/files_public/oqxuebied/DBK_5249.pdf. Accessed on 7th October 2011.
11. Evangelische Kirche in Deutschland. EKD-Statistik – Hauptamt und Ehrenamt 2009 [The Protestant Church in Germany: statistics]. http://www.ekd.de/statistik/hauptamt_ehrenamt.html. Accessed on 7th October 2011.
12. Allensbach Institut für Demoskopie. Berufsprestigeskala 2008 [Job-prestige-scales 2008]. http://www.ifd-allensbach.de/pdf/prd_0802.pdf. Accessed on 7th October 2011.
13. Faktenkontor & Toluna. Lieber Putzfrau als Versicherungsvertreter. Deutschlands unbeliebteste Jobs [Rather a cleaner than an insurance agent. Germany's most unpopular jobs]. <http://www.faktenkontor.de>. Data collected by letter of enquiry on 25th August 2010.
14. Statistisches Landesamt Berlin-Brandenburg. Anzahl der aktiven Lehrkräfte (Personal) an öffentlichen Schulen im Land Berlin-Brandenburg insgesamt sowie der ausgebildeten Sportlehrkräfte [Number of active teachers at general public schools in Berlin-Brandenburg]. Data collected by letter of enquiry on 17th August 2010.
15. Allensbach Institut für Demoskopie. Aktuelle Fragen der Schulpolitik und das Bild der Lehrer in Deutschland [Current questions to the school politics and the picture of teachers in Germany]. http://www.ifd-allensbach.de/pdf/akt_lehrerpunkt.pdf. Accessed on 9th October 2011.
16. Zoglowek H. Lehrer und Sportunterricht [Teachers and physical education]. In: Lange H, Sinnig S. *Handbuch Sportdidaktik*. 2nd edition. Balingen: Spitta; 2009, 117-132.
17. Deutscher Olympischer Sportbund. Organisation des DOSB [Organisation of the DOSB]. <http://www.dosb.de/de/organisation/organisation/>. Accessed on 9th October 2011.
18. Trosien G. Sportökonomie [Sport economics]. Aachen: Meyer & Meyer; 2009.
19. Statistisches Bundesamt. Konsumausgaben privater Haushalte 2010 [Consumption in private households 2010]. http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Presse/pm/2011/01/PD11_010_811,templateld=renderPrint.psml. Accessed on 9th October 2011.

20. OECD. Country statistical profile: Germany 2010. <http://www.oecd-ilibrary.org/docserver/download/fulltext/191100091e11002.pdf?Expires=1318192534&id=id&accname=freeContent&checksum=C0519065D31B4112E197B28403424767>. Accessed on 9th October 2011.
21. Dimitriov D, Helmenstein C, Kleissner A, Moser B, Schindler J. Die makroökonomischen Effekte des Sports in Europa. Studie im Auftrag des Bundeskanzleramts Österreich, Sektion Sport [The macroeconomic effects of sport in Europe]. http://www.sportministerium.at/files/doc/Studien/MakroeffektedesSportsinEU_Finalkorrektur.pdf. Accessed on 27th August 2011.
22. Bundesministerium des Inneren. Der 11. Sportbericht der Bundesregierung (Kapitel E) [11th sport report of the federal government (chapter e)]. http://www.bmi.bund.de/SharedDocs/Downloads/DE/Veroeffentlichungen/11_sportbericht.pdf;jsessionid=5BCD99491F926473549ED2CFD043A130.1_cid239?__blob=publicationFile. Accessed on 27th August 2011.
23. Wydra G. Beliebtheit und Akzeptanz des Sportunterrichts im Saarland [Popularity and acceptance of physical education in Saarland]. <http://www.sportpaedagogik-sb.de/pdf/Schulsport%20im%20Saarland.pdf>. 29th August 2011.
24. Hemming J, Heß F, Wilke K. Abschlussbericht zur Evaluation des Modellversuchs Musikalische Grundschule [Evaluation of the pilot project “musical primary school”]. http://www.bertelsmann-stiftung.de/bst/de/media/xcms_bst_dms_23388_23389_2.pdf. 30th August 2011.
25. Forsa. Mathematik ist das Lieblingsfach der Deutschen [Mathematics is the most popular subject for Germans]. <http://www.forsa.de/>. Data collected by letter of enquiry on 27th August 2010.
26. Hofmann J, Kehne M, Brandl-Bredenbeck HP, Brettschneider WD. Organisation und Durchführung des Sportunterrichts aus Sicht der Schulleitung [Organisation and execution of physical education from the head of school's perspective]. In: DSB (Deutscher Sportbund), editors. DSB-SPRINT-Studie. Eine Untersuchung zur Situation des Schulsports in Deutschland. Aachen: Meyer & Meyer; 2006, 94-114.
27. Klieme E. Zur Entwicklung nationaler Bildungsstandards. Eine Expertise [Development of national education standards. An expertise]. Berlin: BMBF.
28. Muckenfuß H. Physik im sinnstiftenden Kontext [Physics in a sensible context]. Berlin: Cornelsen; 1995.
29. Hentig H. v. Lerngelegenheiten für den Sport [Opportunities of learning for sport]. Sportwissenschaft 1972;2:239-257.
30. Deutscher Bildungsrat. Empfehlungen der Bildungskommission. Strukturplan für das Bildungswesen [Recommendations of the education committee]. Stuttgart: Klett-Cotta; 1970.
31. Luhmann N, Schorr KE. Reflexionsprobleme im Erziehungssystem [Reflexion problems in the education system]. Stuttgart: Klett-Cotta; 1979.
32. Luhmann N, Schorr KE. Technologie und Selbstreferenz. Fragen an die Pädagogik [Technology and self-reference. Questions to pedagogy]. Frankfurt a.M.: Suhrkamp; 1982.
33. Schwarz R. „Fälle“ im Sportunterricht als Beitrag zur Reduktion des Technologiedefizits bei Lehramtsanfängern [“Cases” in physical education as a contribution to reduce the deficit of teacher novices]. In: Thiel A, Meier H, Digel H, editors. Der Sportlehrerberuf im Wandel. Hamburg: Czwalina; 2006, 306-315.