Changes in quality assessment criteria for evaluating education in Polish higher education institutions

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ABSTRACT: Legally based changes in the Polish higher education sector are outlined, including the establishment of higher education professional schools and their impact on the education level of the population. The need for a quality assurance system compliant with the national and international standards is presented, mainly based on the work of the State Accreditation Committee (SAC), a full member of the European Association for Quality Assurance in Higher Education (EAQAHE). The assessment of higher education courses in *Informatics* serves as an example of quality assurance approaches at various groups of institutions. Highlighted is the fact that initial SAC accreditations were based on the assessment outcome of factors affecting the quality of education that were not publicly accessible. This assessment was subjective and often depended on the experience of visiting team members. With time, the assessment criteria were formalised by the SAC and made available on the Internet. Thereafter, the requirement for an internal quality assurance system in higher education institutions has appeared reasonable and appropriate. The final conclusion is that over time the accreditation process could be based on the assessment outcome of such a system, and the current requirement for accreditation of individual units could be removed.

Keywords: Quality assurance systems, assessment criteria, evaluation of higher education institutions, accreditation process

INTRODUCTION

By 1990, at the beginning of political changes in Poland, there were approximately 100 institutions of higher education, mostly state-run. The only exceptions were the institutions associated with the Catholic Church, of which the two most important ones - the Catholic University of Lublin (CUL) and the Academy of Catholic Theology (in Warsaw) - were educating both laity and clergy. Since 1990, higher education has been subject to significant changes, based on the Higher Education Act of 12 September 1990 [1].

The establishment of the first non-state (private) institutions began at that time. Initially, there were only a few such institutions, but over time their numbers increased exponentially. The rigid graduate (Master's) studies system was diversified by introducing two stages. The first stage for obtaining a *professional* degree was supposed to last 3-4 years, concluding with a diploma or a Bachelor of Engineering. The second stage was to last 2-3 years and conclude with a Master's degree [2]. Most of these new institutions offered only the first stage in undergraduate engineering or other Bachelor courses within one faculty and only by external mode. As a result of new legislation, three professors, three doctors and two masters could set up a company, rent classrooms in a primary or secondary school at weekends, and register this establishment as a higher education institution.

To facilitate the process of establishing these new institutions, Parliament enacted a bill on Higher Education Professional Schools on 26 June 1997 [3]. Since 1998, new types of school have begun to be founded under this particular Act and not the Higher Education Act of 1990. The most important change was the provision of education within professional specialisations rather than faculties. Moreover, slightly more stringent requirements were introduced for the founders of new schools [4]. The state also has begun to participate in the process of establishing higher education professional schools, with the result that 40 such state schools were founded in 10 years.

The division of higher education institutions to operate under the two laws was not the best solution. This was particularly true of schools providing professional education for the first degree only. In schools established before 1998, education was provided within faculties similar to universities, and in schools created after 1998, within professional specialisations. The biggest problem that caused much anxiety was the fact that graduates with their first degree in professional specialisations often had problems with articulation to the second stage, where education was provided within faculties.
There were often substantial problems with the alignment of professional specialisations to faculty courses. Finally, the pressure of public opinion, highlighted by the media, compelled Parliament to pass a new Higher Education Act on 27

July 2005 [5]. The new Act covered all higher education institutions in Poland, and introduced a mandatory (with few exceptions) two-stage system of higher education within faculties, a list of which, with binding educational standards (previously referred to as core programmes), was delineated and regulated by the Minister responsible for higher education. At this time, all higher education professional schools were required to align professional specialisations to faculty courses. This was done, unfortunately, often with a large loss to higher professional education.

It should be noted that in over 15 years since 1990, the number of students in higher education institutions has increased fourfold. In 2004, the Central Statistical Office conducted a survey on *the educational paths of Poles* with a view to gathering various data, including the factors determining processes of *education-based careers* of Poles. The survey results demonstrated that education was treated as an investment that could provide satisfactory remuneration and career prospects, reduce the risk of unemployment and raise social prestige.

However, that prestige was associated with a Master's degree and, thus, the strong social pressure to enable the continuation of studies at the second stage upon the completion of undergraduate studies. Considerably less pressure existed with regard to engineering studies, because engineering diplomas were socially recognised as important and highly valued [6].

In general, the higher educational level creates greater opportunities for employment and higher wages, which generate a greater mobility of the professional workforce. All these factors impact on young Poles and the percentage of those undertaking studies has been increasing continually since the early 90s to the present time. In the 2005/2006 academic year, there were 1,953,800 students (including 10,092 foreigners) in all types of higher education institutions, i.e. 1.4% more than in the previous year, and in comparison with the 1990/1991 academic year, the number of students increased by 1,550,000 persons (384%) [7].

There is no doubt that the quality of education, especially in those new schools, was varied and often lacked the required quality. However, all graduates were able to obtain an engineering degree or other diploma recognised by the state. To raise the quality of education and ensure that quality, provisions were made in the Act on Higher Education Professional Schools for the establishment of an accreditation authority with powers to assess the quality of education in professional schools. In 1999, the Accreditation Committee of Higher Professional Education (ACHPE) was created to play this very role. Since then, the Committee has been assessing the quality of education in the newly established schools (usually after a year of activity), reviewing submissions for new schools and proposals for extending existing courses.

Another step to improve the quality of education in Polish universities was the establishment on 1 January, 2002 of a government authority, the State Accreditation Committee (SAC) that replaced the Accreditation Committee of Higher Professional Education (ACHPE), at the solemn handing over the nominations to the SAC members by the then President of the Republic Mr A. Kwasniewski. This indicated the high status that state authorities have attached to the issue of quality of education. The authorities granted the Committee the power to assess the quality of education in all higher educational schools, both state and private, and this assessment was made compulsory.

At about the same time, parallel to the SAC activities, new regional accreditation committees started to emerge that were organisationally attached to various *conferences of rectors* of different types of universities. In the case of technical studies, it was the Accreditation Commission for Technical Universities (ACTU). Undergoing ACTU accreditation was voluntary, as were the accreditations carried out by other regional committees. ACTU criteria, particularly those concerning the substantive education programmes and qualifications of academic staff, were more stringent than those applied by the SAC, which strategically tended to focus more on formal matters and compliance with the law.

THE STATE ACCREDITATION COMMITTEE (SAC)

As already mentioned, in the meantime, the SAC was established within the framework of the Higher Education Act and began to function on 1 January 2002. Initially, the SAC launched the accreditation process in all units of higher education institutions, which most often were faculties and in all fields of study - 118 at that time. The guiding principle was that accreditation for new schools should be carried out after completion of the first educational cycle and the first awarding of diplomas. In the initial period, the SAC's second major responsibility was to review the submissions for new schools and to examine proposals for extending existing courses. The Higher Education Act of 2005 later redefined the SAC's responsibilities [5].

The most important task that remained unchanged was the quality assessment of education in a particular field of study, including teacher training and compliance with the terms and conditions of study. In addition, the SAC could submit to the Minister responsible for higher education opinions and proposals on issues such as:

- Establishing an institution authorised to provide higher education;
- Granting permission to carry out education in a particular field of study or at a certain stage of education;
- Granting permission to an existing or newly established regional faculty, division or branch to provide education;

- Renewing a non-public higher education institution's licence;
- Restoring the right to conduct education in a given field of study;
- Creating a foreign campus by a Polish institution of higher education;
- Establishing an institution of higher education by a foreign university within the Republic of Poland.

Moreover, the Committee can also review draft legislation on science and education, regulations governing higher education, as well as projects on system solutions in higher education presented by the Minister responsible for higher education.

The Committee includes 11 active faculty Teams for:

- Humanities
- Natural Sciences
- Mathematics, Physical and Chemical Sciences
- Agriculture, Forestry and Veterinary Science
- Medicine
- Physical Education
- Technical Sciences
- Economics
- Sociology and Law
- Arts and
- Military Science (this Team was appointed on 20 February 2007).

At least five members of the Committee work within each Team, including at least three with the title of Professor or with a post-doctoral degree in an artistic or scientific discipline relevant to a specific group of courses. The Chairman of the State Accreditation Committee, in consultation with the Committee Executive, decides on, and registers, study fields remaining within the expertise of individual Teams. The Teams formulate opinions and proposals on matters within the scope of the Committee.

In 2008, during its third term of office, the Committee began work with a substantially changed membership (82% of its members were new) that thus far had been stable [8]. The great challenge faced by the Committee was to undergo an external, international assessment based on a comprehensive analysis of the activities of the Committee for standards compliance set by the European Association for Quality Assurance in Higher Education (EAQAHE) and the European Consortium for Accreditation (ECA). Inspections by an international panel of experts conducted on 5-8 October 2008 were successful, and on 23 January 2009, the Committee was granted the status of a full member of the European Association for Quality Assurance in Higher Education (EAQAHE) for a maximum period of five years.

On 15 April 2009, the State Accreditation Committee was added to the European Quality Assurance Register for Higher Education (EQARHE) established jointly by the EAQAHE, the European Students' Union (ESU), the European University Association (EUA) and the European Association of Institutions in Higher Education (EAIHE). The EQARHE is a register of quality assurance agencies whose activities are compliant, to a large extent, with the European Standards and Guidelines for Quality Assurance (ESG). By May 2009, only nine agencies were added to the Register [8].

In 2008, the SAC mission was consistently realised and its strategic objectives were implemented. The Committee examined thoroughly the existing model for quality assessment, taking into consideration the national [9][10] and international experience [11] in this area. Work was undertaken by a Team for Criteria of Quality Assessment in Education, which modified the existing criteria of quality assessment, and worked out new approaches, thereby comprehensively preparing the Committee for the accreditation process directed towards learning outcomes.

More specifically, the Team developed a set of criteria to assess the verification system of learning outcomes, and also student and legal affairs within the university context. The quality assessment criteria of educational programmes, minimum staff thresholds, and the guiding principles for quality assessment in education were also modified, incorporating the need for a mandatory, internal system of quality assurance. A survey for evaluating the Committee's work by inspected institutions was finalised and instituted on 2 January 2009.

The seven-year experience of the SAC, international contacts and the planned amendments to existing laws on higher education were a sound foundation for the introduction of a second path of activities, namely institutional accreditation that would become the next challenge for the SAC in the period 2009-2011 [7][11][12].

ACCREDITATION OF TECHNICAL COURSES

The Committee for Technical Studies provides expertise in 34 fields of study: that is, approximately 20% of all study fields included in the ministerial register. This expertise is provided for courses in: Architecture and Urban Planning; Automation and Robotics; Civil Engineering; Electronics and Telecommunications; Electrotechnics; Power Engineering; Surveying and Mapping; Mining and Geology, Informatics (engineering studies); Chemical and Process

Engineering; Materials Science; Environmental Engineering; Aerospace Engineering; Mechanical Engineering; Mechatronics; Metallurgy; Navigation; Ocean Engineering; Papermaking and Printing; Chemical Technology; Transport; Textiles; Management and Production Engineering. Over 540 institutions carry out technical studies, and 339 of them had been passed by 31 December 2008.

At this point, it is worth noting that engineering degrees are awarded not only to the graduates of technical studies. Another comment is that the private sector is sparsely represented in higher technical education and it is mainly involved in Informatics, Management and Production Engineering. For these specific courses, the provision of laboratories required for engineering education is relatively easy. Other engineering courses are very rarely offered, although there are some exceptions.

In view of the growing demand for engineers, non-state schools undertake initiatives to offer other courses mainly based on the technical resources of vocational schools, local industry, or military reparation plants, etc. However, these attempts are limited by the smaller number of graduates resulting from a demographic trough, and by the continually decreasing number of high school graduates from previous years without degrees or diplomas. Private technical schools already face this problem. The influx of candidates to state technical universities is stable for the time being and, occasionally, it even increases, which is associated with a positive trend of growing interest in technical studies in terms of attractive remuneration and a relative ease in obtaining employment after graduation [7][8].

The accreditation procedure consists of several stages as follows:

- Stage 1 – School (faculty) prepares a self-assessment report, according to the sample model (template) established by the SAC, which contains basic information about the parent institution, and the process of education at an accredited specialty (usually, because the faculty has several fields of study). The time given to the faculty or school for the preparation of the report is six weeks.
- Stage 2 – A SAC Evaluation Team is set up for assessing the quality of education in the academic unit, composed of the chairman (a member of the SAC), two professors - experts in the field of specialty under assessment, an expert on formal and legal matters (usually an employee of the SAC or a Ministry employee), and a student expert (representing the Students' Parliament of the Republic of Poland).
- Stage 3 – The Evaluation Team first studies the self-assessment report sent in by the school/faculty, and arranges the date for an accreditation visit to the school/faculty under assessment (usually a school/faculty or several schools/faculties engaged in the same field of study).
- Stage 4 – The Evaluation Team carries out a (usually) two-day visit to the unit under assessment, during which it verifies the data contained in the self-assessment report, holds meetings with the authorities of the parent institution and school/faculty, the report's authors, staff and students. It also visits classes, laboratories and other teaching/learning facilities. At the end of the visit, the team holds a debriefing meeting involving the authorities of the institution and school/faculty.
- Stage 5 – After the visit, the Evaluation Team prepares its report on the quality of education, which then is sent to the assessed unit with a request to respond to the comments contained therein.
- Stage 6 – At a meeting of the Committee for Technical Studies, the Chairman of the Evaluation Team presents the results of the assessment, and the Chairman of the SAC provides information on individual responses to the report supplied to the unit after the inspection. After considerable discussion, the entire team votes for one of the following four ratings: outstanding, good, conditional (subject to re-evaluation of the unit after a year) or negative.
- Stage 7 – Then, the Executive of the SAC, on the recommendation of the Committee for Technical Studies, adopts a resolution granting accreditation based on the quality of education assessed. It may also inform the unit of certain flaws, and the set timetable for the next assessment. Typically, accreditation is granted for five years. The Executive's decision concerning the assessment may be subject of appeal to the Chairman of the SAC.

Considering the above-discussed factors, Informatics courses, offered by both state and private institutions, will be used to demonstrate the results of quality assessment and resulting conclusions [13]. Both the technical (applied) version of Informatics courses, where graduates are awarded a Diploma of Engineering and in a more university-like (pure) version, where graduates receive a Bachelor's degree, are considered.

Since the diploma or degree in engineering is socially more valued than a Bachelor's degree, the majority of schools, especially private, attempt to obtain permission for conducting engineering courses in the technical version, despite the lack of adequate resources for such education. The Informatics course is conducted in 139 institutions, including 71 state establishments. The Committee for Technical Studies assessed 64 institutions, including 31 state institutions.

The remaining institutions either conduct undergraduate (Bachelor) courses or have not yet been assessed, as they have not completed the full educational cycle. The assessed units had the following numbers of students: 25,107 full-time, including 19,624 in state institutions; and 21,818 external, including 10,218 in state institutions. First- and second-stage courses or uniform Master's courses were conducted by 20 units in state institutions and four units in private institutions. The remaining units conducted only first-stage courses in engineering. In a report summarising education and quality assessment in the Informatics course [13], schools were grouped into technical universities, state higher professional schools (SHPS), and non-state (private) schools. Data concerning this matter are presented in Table 1 below.

Table 1: Data for the analysis of the course *Informatics*.

Type of Institution	Technical Universities (Polytechnics)	State Higher Professional Schools	Non-state (Private) Institutions
Number of Evaluated Units	25	6	30
Number of Ratings Awarded			
a) Outstanding	2	0	0
b) Good (Positive)	20	4	12
c) Conditional	3	1	10
d) Negative	0	1	8
Number of Students in Assessed Units (Specialty *Informatics*)	26,600	3,230	17,100
Including Percentage of Full-Time Students	69%	73%	32%
Average Number of Professors and Doctors in the Unit Engaged in Specialty *Informatics*	33	14	15
Number of Units Able to Confer Scientific Titles	16	0	1
a) Doctor (Dr)	9	0	1
b) Doctor Habilitated (DSc)	7	0	0
Number of Units With Category of Quality of Scientific Research	25	0	3
a) First (Top)	7	0	0
b) Second	6	0	0
c) Third	9	0	1
d) Forth	3	0	1
e) Fifth	0	0	1
f) No Category Assigned	0	6	27
Number of Units With the European Credit Transfer and Accumulation (ECTA) System Implemented:	25	3	22
a) Correctly	15	1	4
b) Only Within Individual Subjects	10	2	18

It can be seen in Table 1 that in the group of technical universities, out of 25 assessed units, 19 units conducted two-stage courses (uniform Master's), and six first-stage courses only. Two assessment results were outstanding, 20 good and three conditional, which is evidence of a sound standard of education. The conditional results referred to decisively weaker institutions in most disciplines. According to the Science Council classification, seven units were in the first category, six in the second, nine in the third and three units in the forth. Technical universities provided education for a total of approximately 26,600 students, 69% of which were full-time students. In most cases both the quantitative and qualitative indicators, regarding teaching staff, were correct.

One unit had 11 teachers with the title of Professor or a post-doctoral degree (Doctor of Science) and 22 teachers with the degree of Doctor. Seven units had the power to confer post-doctoral degrees (Doctor of Science) and nine, the Doctor's degree in Informatics. The European Credit Transfer and Accumulation (ECTA) points system was properly implemented by 15 units, while most had only *points assigned to subjects*. The vast majority of units provide more than one course of study. With a few exceptions, when assessment results were conditional, units met the minimum requirements for teaching staff, offered appropriate plans and programmes of study and ensured the proper conduct of the teaching process. Technical equipment was often outdated, a matter related to financial problems throughout the institution.

In the group of State Higher Professional Schools (or SHPS), all units provided undergraduate courses for an engineering degree. Out of six assessed units, four assessment results were good (positive), one was conditional and one was negative. SHPS had approximately 3,230 students, 73% of which were full-time students. In most cases, the student-teaching staff ratios were correct.

One unit had five teachers with the title of Professor or a post-doctoral degree (Doctor of Science) and nine teachers had a degree of Doctor (the latter were almost exclusively secondary job positions). None of the units was entitled to award doctoral degrees. The credit points system was properly implemented by one unit, two had only *points assigned to subjects*, and in three cases there was no system at all.

In the group of non-state (private) schools, out of 33 assessed units only four had two-stage courses (uniform Master's), while the rest offered undergraduate courses for an engineering degree. None of the assessment results was outstanding, 12 were good, 10 conditional and eight negative, which could not be classified as a good standard of education. Only three units were classified by the Council of Science in respectively the 3rd, 4th and 5th category. Non-state schools educated 17,100 students, 32 % of which were full-time students. In most cases, the student-staff ratios were correct.

On average, one unit had six teachers with the title of Professor or a post-doctoral degree (Doctor of Science) and nine teachers had a doctoral degree.

Only one school had the power to confer the degree of Doctor in Informatics. The points system was properly implemented by four units; 18 had only *points assigned to subjects;* and 11 did not have any points system. Almost none of the schools had implemented an internal quality assurance system. In 19 units, Informatics was the only course of study offered to prospective students; nine units offered two courses, three units – three, one – four, and one – six courses. In most cases, the minimum staff threshold was equal to the number specified by the regulations.

It may be important to add that for most academics in the State Higher Professional Schools and non-state private academic institutions work there is a second job.

The most common causes of negative or conditional assessment results were:

- Employment of teachers as the core teaching staff, especially in non-state schools, without an academic record in the field of Informatics. Most of the time, these teaching positions were not the primary place of work, and often they were occupied by retirees (especially in schools conducting two-stage courses) thus creating an aged workforce. A large proportion of teachers comprising the core staff were only fractionally involved in regular teaching or conducted seminars for graduate students and supervised their theses.
- Schools offering attractively named courses, but with a total lack of specialists in these fields, and often offering specialisations with curricular differences of 60-90 hours only. Some units did not realise 100% of subjects listed in the standards.
- Reducing classes in external studies by cutting significantly the number of hours devoted to laboratories or tutorials, leaving the lecture hours almost unchanged.
- Often carrying out practice during the semester; or, in the case of non-full-time courses, not including it.
- Lack of laboratory classes in subjects other than Informatics. In particular, this applied to Physics (in more than 20 schools), Electronics and Metrology (in 15 schools). Often, instead of proper laboratory classes, demonstrations at lectures or computer simulations were used.
- Courses being conducted in blocks of four and even seven hours.
- Few schools having formal guidelines for the conduct of graduate theses. Often, the topics of theses were incompatible with the specialisations. Some topics were approved by teachers who had no qualifications in Informatics. In some schools, one person supervised too many theses, in extreme cases, even 60.
- Technical equipment in non-state institutions being often far better than in smaller technical universities, with the result that the learning environment for full-time and evening courses was mostly very good in non-state schools, but much worse for external courses, as residential schools included 38-hour programmes, in the case of two-day sessions, or 40-hour programmes for 2.5-day sessions. Such situations also occurred in SHPSs.
- That the results of surveys conducted in most schools were not analysed in any way and the process was not consistently executed.
- Class inspections in the vast majority of state institutions were properly conducted, but they were not really implemented in private schools [7][8][12][13].

AN INTERNAL QUALITY SYSTEM OF EDUCATION

As mentioned earlier, to consolidate, streamline, and ensure transparency and objectivity in the process of quality assessment, the SAC has formulated and published a set of criteria for the assessment of areas that have a significant impact on final grading, that is, study plans and curricula, research, teaching facilities and core teaching staff quotas.

The formal requirements for quality assurance have obliged higher education institutions to develop and implement their own internal systems of quality assessment [8][10][11]. Reports prepared by individual units included broad information on the topic along with self-assessment, which was the first step in assessing the quality of education in the unit.

A properly implemented quality assurance system should include regular monitoring of the five areas below related to the education process, so as to ensure quick response to emerging irregularities:

- Organisation of studies – its analysis and assessment includes implementation and operation of a flexible system of studies, system of credit accumulation and transfer, principles of horizontal and vertical mobility, student placements, internationalisation of education and further expansion of educational provision.
- Study plans and curricula – their assessment, carried out mostly on the basis of documentation, should include the specificity of study fields and specialisations, standards compliance, principles of creating and modifying study plans, graduate competency standards.
- Organisation and implementation of the didactic process – in this case, the subjects of assessment are faculty-based quality assurance systems, study guidelines (i.e. completion of semesters, registration process, principles and methods of examination and marking of subjects, organisation of graduations), learning environment, didactic

infrastructure, libraries, reading rooms and access to databases, as well as the availability of computer-aided teaching systems.

- Teaching staff – with scientific and educational achievements in the relevant field, as staff professionalism and commitment are the decisive factors in the provision of high quality education. The conducive factors include the development of guidelines for staff assessment, especially for academic teachers, regular class inspections, regular anonymous surveys of teaching, provision of teaching courses for new staff members, training for staff destined for managerial positions in academic units, robust workforce planning.
- Students – in this case, the system should support active participation in school life, including contributions to the educational process and associated decision making; involvement of more advanced students in the process of teaching; increased participation of undergraduate and postgraduate students in research; advice on adaptation and other issues related to the educational process [10].

Analysis of the assessed units indicated that most of them had implemented individual elements of the quality assurance system. However, none of them had a consistent feedback system or procedures for corrective actions and preventative measures.

SUMMARY AND CONCLUSIONS

In this article, attempts were made to demonstrate the initial SAC accreditations based on the assessment outcome of several factors affecting the quality of education. This assessment was subjective and often depended on the experience of visiting team members. With time, the assessment criteria were formalised by the SAC and made available on the Internet [14]. Thereafter, the requirement for an internal quality assurance system in higher education institutions has appeared reasonable and appropriate.

Further, over time, it appears that the accreditation process could be based on the assessment outcome of such a system, and the current requirement for accreditation of individual units could be removed. At present, the average faculty in a technical university provides 3-4 courses and each course requires separate accreditation. In future, accreditation will apply to the whole faculty and perhaps even to the whole university or institution.

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BIOGRAPHIES

Stanisław A. Mitkowski was born on 13 December 1944 in Kraków, Poland. In 1962, he commenced his studies in the Faculty of Electrical Engineering at the AGH University of Science and Technology AGH-UST, Kraków, graduating Master of Engineering (Electrical) in 1968. He obtained a PhD and DSc (Doctor Habil.) from the same University in 1974 and 1989, respectively. He has been with the AGH-UST since 1968, initially as an assistant and, since 1992, as a Professor. He has held a number of important positions, including that of the Vice-Rector (Science) between 1990 and 1996, and he has been Head of the Department of Electrical and Power Engineering since 1993. He is an Honorary Professor of the National Mining Academy of Ukraine, Dnepropetrovsk, Ukraine. Prof. Mitkowski also held the position of Vice-Rector for Development at the HEPS in Tarnów (1998-2001), and is Director of its Polytechnic Institute. His research interests include circuit theory, in particular non-linear electric circuits, and engineering education. He has published extensively on these subjects in national and international journals and conference proceedings.

Prof. Mitkowski was Vice-President of the National Council of the Polish Society of Theoretical and Applied Electrotechnics, between 1993 and 2008, and is a member of the Branch of Theory of Electrotechnics of the Committee for Electrotechnics within the Polish Academy of Sciences, a member of the IEEE, a member of the Society of Polish Electrical Engineers, and a member of several other national and international organisations. Between 2002 and 2007, Prof. Mitkowski was a member of the State Accreditation Committee (SAC) in Poland. He was a member of the UNESCO International Centre for Engineering Education (UICEE), and received the UICEE Silver and Gold Badge of Honour for his achievements in engineering education in 1998 and 2007, respectively. Presently, he is an active member of the World Institute for Engineering and Technology Education (WIETE). Prof. Mitkowski is also a passionate stamp-collector and the Chairman of the Kraków Branch of the Society of Polish Philatelists.

Zenon Jan Pudlowski graduated Master of Electrical Engineering from the AGH University of Science and Technology AGH-UST (Cracow, Poland), and Doctor of Philosophy from Jagiellonian University (Cracow), in 1968 and 1979 respectively. Professor Pudlowski is currently Director of the World Institute for Engineering and Technology Education (WIETE), based in Melbourne, Australia, and is an Adjunct Senior Research Fellow at Monash Asia Institute (MAI), based at Monash University, Melbourne, Australia. Most recently, he was Associate Professor, Professor, and the Director of the UNESCO International Centre for Engineering Education (UICEE) in the Faculty of Engineering at Monash University, between 1994 and 2009, and was Associate Dean (Engineering Education) of the Faculty of Engineering between 1994 and 1998. He received the inaugural AAEE Medal for Distinguished Contributions to Engineering Education (Australasia) in 1991 and was awarded the Order of the Egyptian Syndicate of Engineers for Contributions to the Development of Engineering Education on both National and International Levels in 1994.

In June 1996, Professor Pudlowski received an Honorary Doctorate from the Donetsk National Technical University in the Ukraine in recognition of his contributions to international engineering education; in July 1998 he was awarded an Honorary Doctorate in Technology from Glasgow Caledonian University, Glasgow, Scotland, United Kingdom, and in February 2008 he received an Honorary Doctorate in Engineering from Kingston University, London, England, United Kingdom. He was elected a member of the Ukrainian Academy of Engineering Sciences in 1997. In 2002, he was awarded the title of an Honorary Professor of the Tomsk Polytechnic University, Tomsk, Russia, and was an External Professor at Aalborg University, Aalborg, Denmark (2002-2007). In 2009, he was appointed Vice-Chairman of the Board of Governors of the Commonwealth Science and Technology Academy for Research (C-STAR), based in Chennai, India. Prof Pudlowski is listed in 14 *Who's Who* encyclopaedias, and more information about him is available at: http://en.wikipedia.org/wiki/Zenon_J_Pudlowski