THE LECTURER AS SUPERVISOR: THE EFFECT OF ASSESSING THE ABILITIES OF CANDIDATES FOR ACADEMIC SUPERVISION ON SUPERVISION OUTCOMES

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ABSTRACT

This case analysis of supervision outcomes as part of the performance measures of academic faculty is based on a case study of senior faculty at a university in Israel. This is a pioneer study in exploring measures of research outcomes within teaching, i.e., supervision for research purposes. The assumption is that academic teaching consists of guiding students to research, discover, and innovate. The researchers’ point of departure is that these outcomes of the supervisory work have meaning for and impact on the research disciplines in academic institutions in particular and in academia in general. We employed a mixed methods research. Exploratory Factor Analysis (EFA) followed by Structural Equation Analysis (SEM) for goodness of fit. Findings indicate a positive correlation between methods for assessing ability and supervision outcomes, such that the greater the use of methods for assessing ability the higher the supervision outcomes over the years. Practical implications are discussed.

Keywords: Academia. Supervision. Instruction. Research candidates. Supervision outcomes.

O DOCENTE COMO SUPERVISOR: O EFEITO DE AVALIAR AS HABILIDADES DOS CANDIDATOS À SUPERVISÃO ACADÊMICA SOBRE OS RESULTADOS DA SUPERVISÃO

EL PROFESOR COMO SUPERVISOR: EL EFECTO DE EVALUAR LAS HABILIDADES DE LOS CANDIDATOS A LA SUPERVISIÓN ACADÉMICA SOBRE LOS RESULTADOS DE LA SUPERVISIÓN

RESUMO

Esta análise de caso de resultados de monitoramento como parte das medidas de desempenho acadêmico é baseada em um estudo de caso de professores seniores em uma universidade em Israel. Este é um estudo pioneiro na exploração de medidas de resultados de pesquisa no ensino, ou seja, supervisão para fins de pesquisa. O pressuposto é que o ensino acadêmico visa orientar os alunos a investigar, descobrir e inovar. O ponto de partida dos pesquisadores é que esses resultados do trabalho de supervisão têm significado e impacto nas disciplinas de pesquisa em instituições acadêmicas em particular e na academia em geral. Empregamos uma investigação de métodos místicos. Análise Fatorial Exploratória (EFA) seguida por Análise de Equações Estruturais (SEM) para o melhor ajuste. Os achados indicam uma correlação positiva entre os métodos de avaliação dos resultados da capacidade a supervisão, sendo que quanto maior a utilização dos métodos de avaliação da capacidade, maiores os resultados da supervisão ao longo dos anos. As implicações práticas são discutidas.


RESUMEN

Este análisis de caso de los resultados de supervisión como parte de las medidas de desempeño de académicos se basa en un caso de estudio de profesores senior en una universidad en Israel. Este es un estudio pionero en la exploración de medidas de los resultados de la investigación dentro de la enseñanza, es decir, la supervisión con fines de investigación. La suposición es que la enseñanza académica consiste en guiar a los estudiantes a investigar, descubrir e innovar. El punto de partida de los investigadores es que estos resultados del trabajo de supervisión tienen significado e impacto en las disciplinas de investigación en las instituciones académicas en particular y en la academia en general. Empleamos una investigación de métodos místicos. Análisis de Factor Exploratorio (EFA) seguido de Análisis de ecuación Estructural (SEM) para el mejor ajuste. Los hallazgos indican una correlación positiva entre los métodos para evaluar los resultados de la capacidad y la supervisión, de manera que cuanto mayor sea el uso de métodos para evaluar la capacidad, mayores serán los resultados de supervisión a lo largo de los años. Se discuten las implicaciones prácticas.

INTRODUCTION

The role of research and teaching in the higher education system

In the 20th century, the system of higher education underwent a transformation— from a limited elitist system it became a system for the masses. This process, designated “mystification of higher education” (TRÖW, 1970), is evident in the considerable increase in the number of academic students throughout the western world in the process of the 20th century (DAVIDOVITCH; SINUANY-STERN; IRAM, 2012). The shifts in Israel’s system of higher education led to greater access to higher education degrees in general, including advanced degrees (DAVIDOVITCH; SINUANY-STERN, 2014).

The overall goals of higher education in Israel were overshadowed by three dominant conceptions: those of Germany, the UK, and the US. The impact of these conceptions is evident in the perceived aims of the higher education system, namely, the relative significance ascribed to research, teaching, and public service. Paradoxically, despite the American and British influence on Israel’s conception of higher education, as manifested among other things in opening regional colleges and establishing them as a fundamentally social response, it may be said that Israel’s system of higher education is primarily university- and research-oriented. The concept of the research university dictated the configuration of the higher education system (DAVIDOVITCH; SOEN; SINUANI-STERN, 2011).

Evaluating the role of research and teaching

Until the early 1970s the Humboldtian conception of the unity of research and teaching allowed the unquestioned supremacy of research as the goal of the entire system. This conception determined, to a large degree, the character of academic disciplines, affected the curriculum and the system of degrees, and limited the institutional diversity between universities.

Smilor, Dietrich and Gibson (1993) proposed a more detailed model of the two paradigms of the American university: The traditional paradigm whereby research, and primarily basic research, is the main function of the university. Teaching is considered important but has less weight in academic recognition and in academic promotion, compared to research achievements. Community service is often perceived as a natural expansion of the university’s role of research and teaching. This paradigm resulted in advancing basic knowledge, encouraging learned students for society’s aims, and granting professional and institutional recognition by the university.

The evolving paradigm is that universities are devoting increasing attention to developing applied research, innovative and relevant teaching, as well as service in the private, public, and national sectors. The social point of departure is that research universities are the core of higher education around the world and in Israel. Academic institutions that see research as the basis for teaching have an impact on all institutions that offer higher education on different levels and in different forms— for various degrees, making it necessary to define the mutual, fundamental, and practical association between the various types of academic institutions. The universities impart to other institutions of higher education a paradigmatic aspiration for research, teaching, and public service in professional settings (VOLANSKY, 2005).

Indeed, there is no longer any point to the current argument regarding which academic institutions should be considered research-oriented and which non-research oriented. This distinction has been replaced by another, since the faculty at all academic institutions in Israel are at present, to various degrees, qualified for research work and their promotion depends on research publications. This also depends on a clear policy regarding the need of the entire system for research and teaching.

For example, in the American system the elite colleges have excellent faculty who engage in both research and teaching. The colleges are very selective in their choice of students, similar to the elite universities, and they prepare their students for advanced degrees and professional degrees. In Israel, universities engage in all areas concurrently. On one hand, they offer popular higher education, including professional training tracks in “semi-professional” fields. On the other, they constitute centers of scholarship and research in all academic disciplines.

It may be said that the endeavors involved in determining the role of research and teaching in the Hebrew University dictated the conception of the research university and served as milestones in the configuration of the higher education system within the various academic institutions established subsequently as well. They reflect the controversies concerning the goals of academic institutions, the role of disciplines with a general and
professional orientation within the academic study programs, who is entitled to enter the gates of higher education, and how the system is managed.

The trend of merging institutions that operate within the higher education system constitutes, in our opinion, an important key for evaluating the significance of research in all academic institutions in Israel and around the world. Research, with all its products, serves as the basis for allocating funding to academic institutions in Israel, for promoting faculty and awarding tenure in academic institutions, and for the reputation of faculty members and of the academic institutions at which they are employed.

**Performance measures of academic faculty**

Evaluation of faculty activity and performance-based compensation have become important topics in the last four decades [HERR GILLESPIE; HILSEN; WADSWORTH, 2002; WADSWORTH, 1994]. Faculty in academic institutions carry out a wide range of activities that include teaching, research, research publications, presentations in conferences, submitting research grants, academic administration, community service, and others. However, academic freedom makes it hard to supervise and report on faculty performance in the different domains [MANNING; ROMNEY, 1973].

This study is a pioneer study that examines measures of research outcomes in teaching consisting of supervision for purposes of research. The assumption is that academic teaching involves guiding students to explore, discover, innovate. In this study we focused on the academic performance of faculty in a case study of a university in Israel. The study follows the outcomes of past and present faculty supervision of students for advanced degrees: writing articles, presentations at academic conferences, and receiving research grants.

**Creative thinking and originality as predicting efficiency in higher education**

Creative thinking is defined as a cognitive process of original problem solving, used to generate original products [MILGRAM, 1989]. A product may be a response of some type, an idea, a solution to a problem, a concrete product in the arts, music, science, or mathematics, or a solution to a problem that arises with child raising, in business, or in teaching. "Original" is defined as irregular, or in other words, something with low statistical prevalence and high quality, i.e., productive, valuable, or lucrative. As a measure with operative significance, creative thinking is defined using a single measure: the flow of ideas. Based on the work of Guilford [GUILFORD, 1950; 1956], Torrance (1962), and Mednick (1962), a test was developed for measuring the flow of ideas. This test of creativity, called the TACT [MILGRAM; MILGRAM, 1978], was translated into six languages, and since its development was administered in Israel and in other parts of the world [MILGRAM; DUNN; PRICE, 1993] to participants from age 3 [MORAN III; MILGRAM; SAWYERS, FU, 1983] to young adults [MILGRAM; HONG, 1994].

As a whole, the findings of this test provide empirical support for the reliability and validity of the "creative thinking" concept defined above. The strong correlation found between the quantity and quality of conceptual products supports the conclusion that a large flow of ideas produced constitutes a precondition for high-quality responses [MILGRAM; MILGRAM; ROSENBLoom; RABKIN, 1978]. In addition, another effect observed was that popular responses were generated before creative responses [MILGRAM; RABKIN, 1980].

One reason for the few empirical studies on creativity and its efficacy in academic teaching appears to be related to the difficulty of defining and measuring teachers’ efficacy. Another reason is the considerable emphasis given to student evaluations as a measure of teaching efficacy in higher education. Students who evaluate a list of teacher behaviors are often not asked to evaluate the teachers’ creative thinking [HATiVA, 2001; HATiVA; GOODYEAR, 2002]. Based on studies conducted in the last decade, which found an association between creativity and teaching [CASAKiN; DAVIDOViCH; MILGRAM, 2010; MILGRAM; DAVIDOViCH, 2010] the current study examined qualities of creativity and originality as predicting research outcomes, by assessing the supervision provided by lecturers at an institution of higher education.

**Organization and management skills**

The organization and management skills of candidates for supervision, initiative and independence, learning skills, and the time that the supervised student will devote to research, were also examined as part of the component predicting supervision outcomes. These features were examined based on data from Israel’s Central Bureau of Statistics (CBS) [2016] provided in a report on findings concerning competencies and knowledge that students improve during their studies for a degree, beginning from the undergraduate degree. The CBS relates to skills of creativity and originality, skills of organization and management, and learning skills [CBS, 2016]. Time management skills, skills of order and organization, as well as learning skills, may be manifested on a high level
The lecturer as supervisor: the effect of assessing the abilities of candidates for academic supervision on supervision outcomes

in doctoral dissertations. In addition, these skills might affect supervision outcomes, which include presentations at academic conferences, publishing articles, and receiving research grants and awards in the researched topic.

RESEARCH HYPOTHESES

1. Assessing the abilities of a candidate for supervision has a positive effect on research outcomes over the years, namely, the more use is made of methods for assessing abilities, the higher the supervision outcomes over the years.

2. Proof from the field leads to higher supervision outcomes over the years.

3. Personal interviews with the aim of examining the candidate do not result in higher outcomes.

4. Not having rules of thumb (respondents who claimed that they follow no rules) does not result in higher outcomes.

5. Examining the candidate’s level of motivation does not result in higher outcomes.

METHODOLOGY

Initial sample

The survey was distributed online using Google Docs to senior faculty members of Ariel University, who had experience in supervising students for advanced degrees. Sixty completed questionnaires were collected. Gender-wise, 50.9% of the respondents were females and 49.1% males. Respondents’ age ranged from 41-49 (28.3%), 50-60 (37 %), and 61-85 (34.8 %). The mean number of PhD students whom the faculty members had supervised was 4.09.

The survey included closed-end items with responses on a Likert scale ranging from 1 (don’t agree) to 5 (agree), for the following constructs.

Q1. Evaluating the skills of the research candidate before commencing research.

Q5. The level of the supervision products over the years.

The basis of the information sources for Q1 was received from the CBS (2016), to which we added several additional categories. The following are the original categories: competencies and knowledge that students improve in the first two years of their undergraduate studies. The categories are: 1. Professional knowledge, 2. General knowledge, 3. Mathematical abilities, 4. Critical reasoning, 5. Learning skills, 6. Written and oral expression in Hebrew, 7. Command of English, 8. Technological skills (use of computer-internet, programming, computerized information systems), 9. Creativity, 10. Organization and management skills, 11. Research skills/research experience 12. Skills of presentation to an audience.

Teaching students to think (DAVIDOVITCH; ECKHAUS, 2019b) is not an easy task. We therefore added an open question to enable exploration of data from experienced respondents. The open question was “When a candidate approaches you, do you have any signs / rules of thumb to help clarify whether he or she fits the guidelines?”

Analysis

We employed a mixed methods design (SAWITRI; WIDYARINI, 2019), which enables utilization of the complementary strengths of qualitative and empirical methods and improves the understanding of the research questions (DAVIDOVITCH; ECKHAUS, 2019a; b; ECKHAUS; DAVIDOVITCH, 2019). First, we manually reviewed the texts and identified major themes from responses to the open question. Each text was tagged appropriately for including one or more of the themes (ECKHAUS; BEN-HADOR, 2018). The four major themes identified in responses to the open question are:

1. Search for abilities in the field. Proof of the candidate’s abilities (Proof)

2. Interview with the candidate, use of intuition (Chat)

3. No, I have no rules (No)

4. Examines the candidate’s level of motivation (Motivation)
Next, Exploratory Factor Analysis (EFA) was performed, followed by Structural Equation Modeling (SEM) to test the model’s goodness-of-fit (ECKHAUS, 2019a; b; ECKHAUS, SHEAFFER, 2019). Model fit was estimated using CFI, TLI, RMSEA, and CMIN / DF. Values of CFI and TLI above .95 are considered a good fit (XIA; YANG, 2019), a CMIN / DF ratio lower than 2 is considered a good fit (CUI; LU; HISADA; FUJIWARA et al, 2015). RMSEA should be below .06 (NG; CAO; MARSH; TAY et al, 2017).

EFA
A principle-components factor analysis of the 9 items using varimax rotations was conducted. After removing items that did not load well, the Kaiser-Meyer-Olkin measure of sampling adequacy was .77, above the recommended value of .6 (TABACHNICK; FIDEL, 2012), and Bartlett’s test of sphericity was significant ($\chi^2$ (36) = 316.63, $p < .001$). The loadings were all $\geq .7$ (Table 1), which is highly rigorous. Given these overall indicators, factor analysis was deemed to be suitable with the 9 items. Eigen values showed that each variable loads highly onto two factors, explaining 73.78% of the variance. The factor-loading matrix is presented in Table 1.

| Table 1. Factor loadings based on a principal component analysis with varimax rotation for 9 items |
|-----------------|-----------------|
| Q1.14 Initiative and independence | 0.90 |
| Q1.9 Creativity | 0.88 |
| Q1.15 Degree of originality and innovation in the student’s approach | 0.84 |
| Q1.10 Organization and management skills | 0.81 |
| Q1.5 Learning skills | 0.80 |
| Q1.13 The time that the supervised student will devote to research | 0.78 |
| Q5.3 Students I supervised presented their research study at conferences | 0.92 |
| Q5.2 Students I supervised published articles on their research topic | 0.87 |
| Q5.4 Students I supervised received research grants/awards on their research topic | 0.80 |

Source: Search data

Cronbach’s alpha examined internal consistency for the scales, showing adequate alphas of .88 for Q1 and .84 for Q5. A correlation was modeled between all four variables tagged in the open question, as they are all part of the same question.

RESULTS
The correlations, means, and standard deviation values for the four variables tagged in the open questions are presented in Table 2.

| Table 2. Correlation matrix: Means, SD |
|-----------------|-----------------|
| **Proof** | **Chat** | **No** | **Motivation** |
| **Proof** | - | | | |
| **Chat** | -.21 | - | | |
| **No** | -.36** | -.29* | - | |
| **Motivation** | -.05 | .05 | -.20 | - |
| **Mean** | .42 | .32 | .15 | .38 |
| **SD** | .50 | .47 | .36 | .39 |

Source: Search data

* $p<.05$, ** $p<.01$

Figure 1 illustrates the model and the regressions’ weights.
The hypothesized model showed a good fit: CMIN / DF = 11, ρ > .05, CFI = 0.99, RMSEA = 0.04, TLI = .97. All hypotheses were supported. Q1 positively affects Q5 (H1) (β = .31, p < .05). Proof positively affects Q5 (H2) (β = .3, p < .05). Chat, No, and Motivation have no statistically significant effect on (H3-H5). Age and gender have no statistically significant effect on Q5.

**RESEARCH LIMITATIONS**

In this study we approached faculty members who supervise students for advanced degrees. This was the first time that they were asked to express their opinion on the supervisory work. We talked to them and it was not easy for them. Moreover, faculty members qualified to serve as supervisors must be of senior lecturer rank or higher. This fact reduces the ability to obtain a large sample.

To validate the model we used SEM, a powerful tool that is much stronger than analysis of independent regressions, which is capable of combining latent variables. SEM is normally utilized for larger samples. However, the high measures achieved and the fact that this is a pioneer study, the first of its kind, are a strong basis for further research on the subject.

**SUMMARY AND DISCUSSION**

This study examines the supervision outcomes of faculty members who supervise students for advanced degrees. Academic supervision outcomes were examined by exploring the following: writing articles, presentations in academic conferences, and receiving research grants. The premise of this study is that work as supervisors is an inseparable part of academic teaching, and since the supervision is provided for advanced degrees—the academic outcomes are the product of research work. From this respect this is a pioneer study that examines research outcomes in teaching, i.e., supervision for purposes of research, aimed at discovery, innovativeness. These outcomes of the supervisory work have meaning and influence in research domains, in academic institutions in particular and in academia in general.

The research findings indicate a significant positive correlation between methods utilized to assess abilities and supervision outcomes, namely, the greater the use of methods for assessing abilities the higher the supervision outcomes over the years. This means that assessing the abilities of supervised students before they conduct research, for the purpose of assessing the competence of candidates for advanced degrees to produce academic outcomes, is very significant.
The findings of this study may have practical implications for faculty members in academia with regard to preliminary criteria for assessing supervised students, even before they begin their research. Since accessibility to higher education has an impact on programs for advanced degrees as well, and since advanced degrees have become a social and/or professional status that often has financial implications, many apply to these programs. Academic faculty have an academic mandate and are therefore obligated to choose those with proven competencies. The study shows that the measures found significant for supervision outcomes are: on one hand, personality traits of creativity and originality, and on the other, traits of management and organization: organization and management skills of the candidate for receiving supervision, initiative and independence, learning skills, and the time the supervised student will devote to research. All these effect supervision outcomes which are: presenting at academic conferences, publishing articles, and receiving research grants and awards on the research topic.

Another practical implication of the research findings is that there is need for a true grasp of the candidate’s abilities rather than making do with an interview or intuition, which were not found to be beneficial. For instance, the candidate must write what topic he seeks, what is new about it, such that it will be possible to receive an impression of the candidate’s manner of writing and expression. Namely, not only what he wrote but also how he wrote. In addition, it is necessary to pay special attention to the candidate’s availability for conducting research, due to the fact that doctoral studies have a limited time span.

Also, the research findings show that 15% of faculty members had no criteria for choosing candidates, which puts at risk the chance that the supervision will succeed and efficient utilization of the resources available to the supervisor and of course has implications for possible outcomes of the supervision. In an era when the demand exceeds the supply, with regard to supervisors and their ability to concurrently supervise several candidates, in an era when more than 75% of Master’s degree students choose a non-thesis track, in an era when faculty are measured by their research outcomes, it is very important to choose candidates who have research potential. These findings form part of the essence of academia in Israel and around the world.

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