

Adaptación, validación y estandarización de cuestionarios para egresados y empleadores en el Estado de México

Adaptation, validation and standardization of questionnaires for graduates and employers in the State of Mexico

Elvira Ivone González Jaimes

Universidad Autónoma del Estado de México, México

ivonegj@hotmail.com

Eliseo Suárez Munguía

Universidad Autónoma del Estado de México, México

suarezmunguia@yahoo.com.mx

Resumen

El objetivo de este trabajo fue adaptar, validar y estandarizar dos cuestionarios, uno para egresados y otro para empleadores; ambos cuestionarios presentan datos específicos y comparten los requisitos de ingreso, los cuales son expresados en las competencias que se requieren para ingresar al mercado laboral. La meta es obtener denominadores comunes entre ambos sectores para que haya correspondencia entre la demanda y la oferta de empleo.

El método utilizado fue de diseño cuasiexperimental con dos fases, ambas con cortes transversales y análisis tanto descriptivo como analítico. En la primera fase hubo una muestra de 516 egresados y en la segunda fase una muestra de 24 empresas para realizar la adaptación y validación de los ítems.

En los resultados, los ítems que integran los cuestionarios presentan validez concurrente de constructo mayor al 80 % y confiabilidad inter-grupos de $r^2 > 0.75$ en $p < 0.05$. En términos generales, la escala total del cuestionario obtuvo una confiabilidad de $\alpha = 0.8332$.

Palabra clave: egresados, empleadores, competencias laborales.

Abstract

Objective is adapted, validated and standardized questionnaires one for graduates and one for employers; both questionnaires have specific data and share the income requirements. Requirements expressed in skills needed to enter the labor market. The goal is to have common denominators between the two sectors so that there is correspondence between the demand and supply of employment.

Quasi-experimental design with two phases was applied; both contain cross-sectional descriptive and analytical analysis. The first phase has a 516 our graduates to perform validation of the items adaptation. The second has a 24 our companies where items are validating and standardization.

The items that make up the questionnaires have concurrent validity of construct 80 % greater reliability and inter-groups was $r^2 > 0.75$ at $p < 0.05$. Overall, the total scale of the questionnaire obtained a reliability of $\alpha = 0.8332$.

Key words: graduates, employers, labor competencies.

Fecha Recepción: Febrero 2015

Fecha Aceptación: Septiembre 2015

Introduction

In practice it has been observed that evaluations of graduates and employers are very different because they depend on the area of study and work to evaluate. This study seeks to identify the essential elements of quality education that requires the graduate to be hired occupationally (Esteve, 2009).

Thus, in the present investigation two innovative systemized questionnaires that evaluate both essential aspects that require a graduate, as the aspects that requires an employer to hire the intern fresh out either developed or entitled.

Both questionnaires are made so accessible, fast, accurate and reliable. This will help observe the job profiles that require graduates to be hired. The questionnaires provide for comprehensive education and quality as today's world requires to suit the means of production and competitiveness (Horgan, 2004).

The questionnaires are validated and standardized in the population of university graduates and employers located in the industrial zone of the municipality of Lerma Toluca, State of Mexico. The axes are to assess the knowledge acquired in the study area, skills and attitudes. This aims to have an adequate view to increasing the employability of graduates (Milos and Galdames, 2007).

Background questionnaires

The questionnaires are based on the Tuning project, which was created by European universities and presented in 2003 at the Conference Tuning Educational Structurest.

The Tuning project proposes a continuous dialogue between education and social needs. Its purpose is to measure and compare learning outcomes expressed in terms of generic and specific to each area as credits recorded in professional development skills. Over sixteen Questionnaire Tuning has proven to be an effective and high levels of reliability and validity in various global identities instrument since it was created with a universal language to measure various disciplinary areas regardless of the location where study (González and Wagenaar, 2006).

In this study the questionnaire Tuning is standardized in two formats: graduates (interns or graduates) and employers in different work areas, in order to obtain the necessary indicators for continued monitoring graduates that allow you to adjust educational programs to social requirements and the labor market.

The Tuning project considers the development of skills from: 1) the new educational paradigm, where educational efforts focus on the individual learner, who agrees with the level of learning and continuity of it because it must adapt their knowledge to surrounding world, which is

changing rapidly and where learning to learn operationally is considered the cornerstone, 2) the need for quality and increasing access to employment and responsible citizenship, considering the quality and transparency of purpose, processes and results. Access to employment depends on the skills and activities related to the ability to solve the main problems of the working world, typical of a society in permanent transformation skills. These issues require rigorous analysis that give way to the constant review of educational programs, 3) the creation of higher education institutions projected counterparts in teaching quality and its universal application as required by globalization.

The Tuning questionnaire contains 30 items measuring 10 instrumental skills, interpersonal skills 8 and 12 systemic skills:

This follow-up study graduates aims to: provide inputs for evaluation and planning of educational policies accrediting institutions racing (SEP, ANUIES, IES). As it stated in Article 4 of the Rules of Professional Studies, on page 195: "the primary purpose of professional education is the training of students by developing their abilities, skills, attitudes and values to exercise professional activities high quality and evolve in the workplace and to perform in the inquiry, creation and recreation of knowledge. "

5 instrumental skills, 5 races: In the adaptation, validation and standardization was done to the population of graduates from the University of the State of Mexico and enterprises in the industrial zone of the municipality of Lerma, State of Mexico, fifteen items to measure used interpersonal and systemic competencies 5 (Hogan, 2004).

Methodological background to adapt, validate and standardize questionnaires for graduates and employers

In order to implement successfully a quiz or test must bear in mind the concept of generalization, focusing limitations pointing Muñiz (1998) Classical Test Theory.

1) The population should share similar conditions to the original in which the instrument was developed. This aspect has already been passed and now Tuning questionnaires, which were validated and standardized Hispanic college students are used.

2) Another limitation is that the questionnaires should be flexible enough to accommodate in similar conditions and circumstances of application. This other aspect was also revised in each of the questionnaires through pilot tests performed in similar conditions and circumstances (Muñiz, 1998).

Process

Objective general.- adapt, validate and standardize questionnaires for graduates and employers using an innovative product accessible, agile and reliable use. This allows graduate assessments regarding the requirements you must meet to be hired, as well as meet employer assessments regarding the requirements you need to meet the needs of the job. Thus a common denominator between graduates and employers is obtained.

The design was quasi-experimental field, with two phases, both descriptive and analytical analysis.

Phase 1 Questionnaire for graduates (interns or graduates)

Traversal to measure accessibility, agility, reliability and standardization of the items (Tintaya, 1999) type.

Phase 2. Questionnaire for Employers

Transversal for reliability and standardization by specifying the items (Tintaya, 1999).

Sample

Phase 1 Questionnaire for graduates (interns or graduates)

A random sample of 516 students from seven schools, each representing an area of knowledge of the UAEM (De Rojas, sign design for complex studies, 1998) was selected: average age 26.8 years, male 59%, and single marital status 56%.

Phase 2 Questionnaire for Employers

Twenty-four companies in the industrial zone of the municipality of Lerma, State of Mexico, for the seven areas of knowledge that divides the UAEM and belonging to various sectors of production.

Statistical procedure

- a) For the specific characteristics of the samples the descriptive analysis of each of the groups of graduates and employers was performed.
- b) To adapt the questionnaire items Tuning the population of the State of Mexico was divided into: senior students of the Autonomous University of the State of Mexico (UAEM) and recruiters of companies in the industrial zone of the municipality Lerma, State of Mexico. Also, a pilot test in accordance with considerations of Kerlinger (2009) was performed by applying adaptation Tuning questionnaire by the concurrent validity of the items.
- c) For the reliability of the questionnaire and identify the structure of its size analysis of internal consistency of items was performed discrimination, through factor analysis with orthogonal rotation of major components. Thus the internal consistency for each competency based on the Alpha Cronbach scale was obtained. They reported only items with $\alpha > 0.70$ (Cronbach, 2012).
- d) For the standardization external consistency and external validation in different populations was measured, obtaining the same results in a sample of 516 graduates, who came from seven different areas of study and having as options for 24 employer companies in such areas study (Chacon and Perez Gil, 2008). Test least squares regression was applied to observe the variability between groups considering $r^2 > 0.75$ en $p < 0.05$.

Results

To know the characteristics of the sample of graduates A descriptive analysis was made of the same, $n=512$ fellows. See table I.

Tabla I: Características de la muestra de egresados

Variable socio-laboral	n=516			
	total	estudiantes		
		pasantes	titulados	
Condición académica	516	175	341	
		un mes a un año	un año a tres años	tres años a cinco años
Tiempo de obtención de título	285	86	125	74
Actualmente tiene empleo	354	50	184	120
Tiempo de obtención de empleo en su área de conocimiento	245	124	97	24

A descriptive analysis was also performed to the sample of graduates to know their characteristics, n=24 companys. See table II.

Tabla II: Características de la muestra de empresas

n=24		
Tipo de organización	pública	29 %
	privada	62 %
	otros	9 %
Tamaño de la organización	grande	21 %
	mediana	33 %
	pequeña	46 %
Sector de producción	primario	13 %
	secundario	18 %
	terciario	48 %
	cuaternario	12 %
	quinario	9 %

For the process of adaptation of the questionnaire items Tuning in senior students of the UAEM and recruiters of companies in the industrial zone of the municipality of Lerma, the concurrent validity of the items (Kerlinger, 2009) it was applied.

The sample consisted of:

1) graduates (516 interns or graduates) from seven faculties, each representing an area of knowledge of the UAEM. Here high scores were obtained: a) instrumental skills earned five items with 128 responses, showing 84.80% of concurrent validity, b) Systemic competences gained five items with 182 responses, showing 95.27% of concurrent validity, and c) interpersonal skills earned five items with 206 responses, showing 89.92% of concurrent validity. See Annex I.

2) Employers of twenty four companies (5 Administrative companies, 4 engineering and production technology, 2 pharmaceutical companies, 2 general hospitals, 2 agricultural enterprises, 3 chemical companies, 4 education schools (middle and high school) and 2 architectural firms, design and urbanism, where high scores were obtained: a) Instrumental competitions won five items with three responses, showing 82.5% of concurrent validity, b) systemic competences won five items with four answers, showing 83.33% of concurrent validity, c) Interpersonal skills earned five items with five responses, showing 81.66% of concurrent validity. See Annex II.

It is important to note that were attached to the questionnaire four items: one in instrumental skills (titration), another in systemic skills (recognition of the area within the institution exit) and two in interpersonal skills (recommendations / references and own discipline) because They were identified by employers as key instruments for hiring graduates. Alfa de Cronbach (Cronbach, 2012).

The reliability obtained by the inter-group in the total scores of the three scales of competence was $\alpha=0.85$ and intra-group reliability of total scores of the three scales was $\alpha=0.80$.

Overall, the total scale of reliability of questionnaire obtained $\alpha=0.8332$. See table III.

Tabla 3: Confiabilidad de ítems en Cuestionarios para egresados y empleadores

n= 516 egresados y 12 empresas					
Competencia s Instrumentales	α=0. 80	Competenci as sistémicas	α=0. 82	Competencia s interpersonales	α=0. 80
1.		5.		7.	
Conocimiento del área o campo de estudio.	α=0. 84.	Reconocimiento del área dentro de la Institución de egreso	α=0. 72.	Recomendaciones/ Referencias	α=0. 54.
2.		9.		8.	
Titulación.	α=0. 87.	Capacidad de Liderazgo	α=0. 77.	Personalidad/Actitud es	α=0. 64.
3.		11. Habilidad		10. Habilidad	
Experiencia laboral/práctica (antes de egresar).	α=0. 88.	para resolver problemas, capacidad de análisis y creatividad	α=0. 73.	de relaciones personales (trabajo en equipo y capacidad de negociación)	α=0. 73.
4.		12. Habilidad		14. Poseer	
Habilidades básicas de manejo de programas de cómputo correspondientes a su área de conocimiento	α=0. 75.	para el aprendizaje y administración del tiempo.	α=0. 69	valores	α=0. 56.
6.		13. Poseer		15. Poseer	
Conocimiento de idiomas extranjeros	α=0. 68.	motivación, iniciativa y persistencia	α=0. 71.	disciplina	α=0. 67

The standardization process (external validation) was measured by observing the external consistency of the behavior of the sample of graduates who come from seven areas of study and 24 recruiters in the different areas of study (Chacon and Pérez-Gil , 2008). Test Least Squares Regression to observe the variability between groups considering $r^2 > 0.75$ en $p < 0.05$. See table IV.

Tabla IV. Regresión de mínimos cuadrados entre los grupos de egresados y empleadores

Variables grupos	r ²	p
<i>Siete grupos de egresados</i>	0.772	0.034
<i>Siete grupos de empleadores</i>	0.843	0.042

Conclusión

The evaluation of graduates and employers is very different because it depends on the area of knowledge and employability of graduates is offered. Many companies use various methods to select their employees, so that standardization of these tests are intended in an area where universities and employers measure the same skills. This would allow universities to train their students to meet social needs and thus ensure their employability as their learning is meeting the needs of the labor market (Esteve, 2009).

We take as a basis the questionnaire Tuning because it is universal and use several cities of the European Union, although it was also necessary to adapt, validate and standardize the mexiquense population, an area where it is necessary to standardize what is taught in universities and what It requires the labor market (González and Wagenaar, 2006).

As you can see, in this study it took into account the Autonomous University of the State of Mexico because it is an educational institution that in 2015 presented an enrollment of 55,227 students, is present in twenty-four mexiquenses municipalities and has a coverage statewide 31.4% and 39.2% nationally. Plans and curricula do not apply only within their precincts, but beyond its borders with fourteen built universities, whose enrollment recorded in 2015 and 8334 students in 38 mexiquenses municipalities, which is present in 62 mexiquenses municipalities (UAEM , 2015).

The industrial corridor Toluca Lerma, in the municipality of Lerma, State of Mexico, home to a number of specialties both industries and companies in the public and private sectors, each with a different number of employees. These can range from small to large companies, within five

production sectors. Therefore, diversification was appropriate for validation and standardization of the questionnaire.

The adaptation of the questionnaire was vital so that graduates and employers have the items required to measure the skills that meet the needs of the labor market (Kerlinger, 2009).

Validation had the function of measuring what was intended. a single questionnaire to apply to both graduates and employers, with 15 items that measured the required skills are developed. Thus a fast, reliable and complete questionnaire (Cronbach 2012) was obtained.

Finally, the test of least squares regression was used to determine the parallelism between groups of graduates from seven areas of study and groups of companies in the various sectors of production (Chacón y Pérez-Gil, 2008).

Bibliography

- Chacón Moscoso, Salvador; Pérez-Gil, José Antonio (2008). Diseño y medición de programas de intervención neuropsicológica: aspectos fundamentales. Universidad de Sevilla [Versión electrónica] Extraído el 9 de octubre de 2015 de:
file:///C:/Users/hp/Downloads/tema2_tct.pdf
- Cronbach, L. J. (2012). Fundamentos de los Tests Psicológicos. España, Biblioteca Nueva. [Versión electrónica]. Extraído el 9 de octubre de 2015 de
scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727 (enlace inactivo)
- Esteve, J. M. (2009). La educación en la sociedad del conocimiento. Una tercera revolución educativa. Universidad de Málaga. España: Grupo de Trabajo sobre profesionalización docente de PREAL. [Versión electrónica]. Extraído el 9 de octubre de 2015 de
http://www.oei.es/reformaseducativas/educacion_sociedad_conocimiento_tercera_revolution_esteve.pdf
- González, Julia y Wagenaar, Robert (2006). Tuning Educational Structures in Europe II. Universidad de Deusto, Bilbao [Versión electrónica] Extraído el 9 de enero de 2016 de
http://www.unideusto.org/tuningeu/images/stories/Publications/Tuning_2_CAST_PR2_.pdf
- Hogan, T. (2004). Pruebas psicológicas. Una introducción práctica. México: Manual Moderno. [Versión electrónica]. Extraído el 27 de Mayo de 2015 de
http://web.usach.cl/psicologia/congreso/programa_cientifico.pdf (enlace inactivo)
- Kerlinger, N. F. (2009). Investigación del Comportamiento. México: Mcgraw-Hill Muñiz, F. J. (1990): Teoría de Respuesta al Ítem, Madrid: Pirámide. [Versión electrónica]. Extraído el 9 de octubre de 2015 de www.uv.es/~meliajl/Research/EstimationWeb/Estindex.htm
- Milos, I. y Galdames, M. (2007). Perfil, Diagnóstico y Aplicación de los Estilos de Aprendizaje en las Prácticas de Laboratorio en Estudiantes de Psicología. II Congreso Chileno de

Psicología. [Versión electrónica]. Extraído el 9 de octubre de 2012 de web.usach.cl/psicologia/congreso/programa_cientifico.pdf

Muñiz, F. J. (1998). Teoría Clásica de los Test, Madrid: Pirámide. [Versión electrónica] Extraído el 9 de octubre de 2015 de www4.ujaen.es/~lmlozano/docencia/Fundamentos/Programa.pdf

Rojas, S. R. (1998). Guía para realizar investigación social, ed. 32, Ciudad de México: Plaza y Valdez, pp. 298-308. [Versión electrónica] Extraído el 9 de octubre de 2012 de www.uv.es/aleza/Bibliogr%20EA.pdf

Tintaya, P. (1999). Diseños de investigación. La Paz: CISPE. [Versión electrónica] Extraído el 9 de octubre de 2015 de www.iep.org.pe/textos/DDT/mineriyconflictosocial.pdf

UAEM (2015). Agenda estadística 2015, Universidad Autónoma del Estado de México. Mexico. [Versión electrónica] Extraído el 9 de febrero de 2016 de: http://planeacion.uaemex.mx/docs/AE/2015/AE_2015.pdf

UAEM (2014). Reglamento de estudios profesionales, Artículo 4, p. 193, 1ª ed., Universidad Autónoma del Estado de México. México [Versión electrónica] Extraído el 9 de febrero de 2016 de: <http://www.uaemex.mx/abogado/doc/0006%20REP.pdf>

Anexo I

CUESTIONARIO PARA EGRESADOS (PASANTES O TITULADOS)

Instrucciones.- Marque con una x las siguientes opciones:

1. Área de estudio:
 - a) Ciencias Sociales y Administrativas
 - b) Ingeniería y Tecnología
 - c) Ciencias de la Salud
 - d) Artes, Educación y Humanidades
 - e) Ciencias Naturales y Exactas
 - f) Arquitectura, Diseño y Urbanismo
 - g) Ciencias Agropecuarias

2. Tiempo de ser pasante
 - a) 1 mes a 1 año
 - b) 1 a 3 años
 - c) 3 a 5 años

3. Obtención de título
 - a) Sí
 - b) No

4. Tiempo de obtención de título
 - a) 1 mes a 1 año
 - b) 1 a 3 años
 - c) 3 a 5 años
 - d) 5 a más años

5. Actualmente tiene empleo
 - a) Sí
 - b) No

6. Tiempo en que obtuvo un empleo
 - a) 1 mes a 1 año
 - b) 1 a 3 años
 - c) 3 a 5 años
 - d) 5 a más años

7. Empleo dentro de tu área de estudio
 - a) Sí
 - b) No

Si tiene empleo, por favor conteste la siguiente sección de datos sobre la organización empleadora:

8.- Nombre de la institución, empresa u organización:

9.- Tipo de organización

- a) pública
- b) privada

10.- Tamaño de la organización

- a) grande (100 empleados o más)

- b) mediana (31 a 99 empleados)
- c) pequeña (30 empleados o menos)

11.- Indique al sector de producción al que pertenece.

- a) primario (materias primas)
- b) secundario (actividad artesanal e industrial manufacturera)
- c) terciario (servicios)
- d) cuaternario o de información (gestión y distribución de la información)
- e) quinario (cultura, educación, arte y entretenimiento)

Aspectos frecuentes requeridos por empresas para emplear al egresado

Indique con una x la importancia que le da a los siguientes aspectos para la contratación de un pasante o titulado. A) muy importante, B) importante, C) regular, D) poco importante, E) sin importancia.

	A	B	C	D	E
1. Conocimiento del área o campo de estudio					
2. Titulación					
3. Experiencia laboral / práctica (antes de egresar).					
4. Habilidades básicas de manejo de programas de cómputo correspondientes a su área de conocimiento.					
5. Reconocimiento del área dentro de la institución de egreso.					
6. Conocimiento de idiomas extranjeros					
7. Recomendaciones / referencias					
8. Personalidad / actitudes					
9. Capacidad de liderazgo					
10. Habilidad de relaciones personales (trabajo en equipo y capacidad de negociación).					

11.Habilidad para resolver problemas, capacidad de análisis y creatividad.					
12.Habilidad para el aprendizaje y administración del tiempo.					
13.Motivación, iniciativa y persistencia					
14.Valores					
15.Disciplina					

Anexo II CUESTIONARIO PARA EMPLEADORES

1.- Nombre de la institución, empresa u organización:

Instrucciones.- Señale con una x las siguientes opciones:

2.- Principal actividad de la empresa correspondiente al área:

- | | |
|--|-------------------------------------|
| a) Ciencias Sociales y Administrativas | b) Ingeniería y Tecnología |
| c) Ciencias de la Salud | d) Artes, Educación y Humanidades |
| e) Ciencias Naturales y Exactas | f) Arquitectura, Diseño y Urbanismo |
| | g) Ciencias Agropecuarias |

3.- Tipo de organización

- | | |
|------------|------------|
| a) pública | b) privada |
|------------|------------|

4.- Tamaño de la organización

- a) grande (100 empleados o más)
- b) mediana (31 a 99 empleados)
- c) pequeña 30 empleados o menos)

5.- Indique el sector de producción al que pertenece.

- a) primario (materias primas)
- b) secundario (actividad artesanal e industrial manufacturera)
- c) terciario (servicios)
- d) cuaternario o de información (gestión y distribución de la información)
- e) quinario (cultura, educación, arte y entretenimiento)

Aspectos frecuentes requeridos por su empresa para emplear a recién egresados (pasantes o titulados)

Indique con una x la importancia que le da a los siguientes aspectos para la contratación de un pasante o titulado. A) muy importante, B) importante, C) regular, D) poco importante, E) sin importancia.

	A	B	C	D	E
1. Conocimiento del área o campo de estudio.					
2. Titulación.					
3. Experiencia laboral / práctica (antes de egresar).					
4. Habilidades básicas de manejo de programas de cómputo correspondientes a su área de conocimiento					
5. Reconocimiento del área dentro de la institución de egreso.					
6. Conocimiento de idiomas extranjeros					
7. Recomendaciones / referencias					
8. Personalidad / actitudes					
9. Capacidad de liderazgo					
10. Habilidad de relaciones personales (trabajo en equipo y capacidad de negociación).					
11. Habilidad para resolver problemas, capacidad de análisis y creatividad.					

12.Habilidad para el aprendizaje y administración del tiempo.					
13.Motivación, iniciativa y persistencia					
14.Valores					
15.Disciplina					