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Procedia Social and Behavioral Sciences 5 (2010) 2343–2350

Procedia
Social and Behavioral Sciences

WCPCG-2010

Lifelong learning tendency scale: the study of validity and reliability

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Received January 7, 2010; revised February 1, 2010; accepted March 28, 2010

Abstract

The aim of this research is to develop a scale to determine university students' lifelong learning tendencies. The pre-trial form of Lifelong Tendency Scale (LLTS) containing 74 items was administered to 642 university students and explanatory factor analysis was conducted so as to determine the construct validity. On the data, items that were not significant according to the t value results were deleted from the scale and item-total correlations were also calculated. For concurrent validity, "Curiosity Index" was used and Pearson correlation coefficient having relation with the lack of curiosity sub-dimension of LLTS was found as .76. Consequently, the Cronbach alpha internal consistency coefficient of the ultimate scale containing 27 items and four sub-dimensions (motivation, perseverance, lack of regulating learning, and lack of curiosity) was calculated as .89. All the analyses conducted made it clear that LLTS was valid and reliable as a scale to determine lifelong learning tendencies.

Keywords: Lifelong learning, lifelong learning tendency, scale development, validity, reliability

1. Introduction

Lifelong learning, also known as LLL, is the lifelong, lifewide, voluntary and self-motivated pursuit of knowledge for either personal of professional reasons. As such, it not only enhances social inclusion, active citizenship and personal development, but also competitiveness and employability. The term recognises that learning is not confined to childhood or the classroom, but takes place throughout life and in a range of situations. During the last fifty years, constant scientific and technological innovation and change has had a profound effect on learning needs and styles. Learning can no longer be divided into a place and time to acquire knowledge (school) and a place and time to apply the knowledge acquired (the workplace) (Fischer, 2000).

In essence, the basic idea behind the term "lifelong learning" is that deliberate, focused learning does and should occur throughout a person's lifetime. Therefore, for university education the following are considered crucial: student-centred learning; a focus on learning so as to equip students with the attitudes and skills to learn for themselves both in formal education and lonog after they have graduated; recognising that learning occurs in a wide variety of contexts both in the University's academic and non-academic settings, and beyond, in the community, the workplace and the family (i.e. "lifewide learning"). (Kiley and Cannon, 2000).

According to Knapper and Cropley (2000), lifelong learners; plan their own learning; assess their own learning; are active rather than passive learners; learn in both formal and informal settings; learn from their peers, teachers,

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doi:10.1016/j.sbspro.2010.07.461

mentors etc; integrate knowledge from different subject areas when required and use different learning strategies for different situations.

2. Method

2.1. Study Group

The aim of this research is to develop a scale to determine university students' lifelong learning tendencies. The study group was composed of the first and final year students of the Faculties of Arts and Science, Education, Engineering, Medicine, Pharmaceutics, Economic and Administrative Sciences, Fine Arts, and Law at Marmara and Yeditepe Universities which differ in terms of administrative, academic and social features (N=642).

3. Findings

3.1. Validity Studies of Lifelong Learning Tendency Scale

The validity of Lifelong Learning Tendency Scale (LLTS) was determined through studies of content validity and construct validity. Content validity represents the extent to which a test contains the behaviors that the test intends to measure. For content validity, expert opinion may be requested or correlation with a test that is known to measure the same content may be used (Baykul, 2000: 202-203).

Firstly, theoretical framework was constructed through literature review in developing the scale. Then an essay of opinion concerning lifelong learning was obtained from the related university students (N=12) and lecturers (N=15). In the essays the students and lecturers were asked to explain what the concept of lifelong learning means to them and to state their thoughts regarding lifelong learning. Afterwards, a pool of items was formed, and items to describe the characteristics of lifelong learning individuals (N=94) were formed. People with differing properties (expert, academician, student) were then made to examine those items in terms of language, understandability and fitness to the purpose; and in line with their views deleting and modifications were made to the items and thus the number of items was reduced to 74.

Another study done for the content validity of LLTS was to examine the correlation with a test known to measure the same content. "If another test known to measure the same content with sufficient validity and reliability is available, the two tests are applied to the same group. The correlation between the observed scores is calculated. The scale on which work is done is regarded valid to the extent that the correlation is close to 1. Content validity obtained in this way is also called concurrent validity" (Thorndike and Hagen, 1959, Turgut, 1980; cited by Baykul, 2000: 205). Curiosity index Version 3 developed by Erwin was used in this study for concurrent validity. Curiosity is regarded as one of the features of lifelong learners (Day, 1999; Fulcher, 2004). "Curiosity Index", which was developed by Erwin (1998) and which consisted of two sub-dimensions called width and depth, was adapted into Turkish. The correlation holding between the Turkish and English forms of curiosity index was found to be 69. Şencan (2005: 253) points out that correlation coefficients between .60- .80 signal strong relations. Since the level of correlation coefficients for the applications of both forms was .60 and above, it was at a sufficient level. Cronbach alpha value, which was the indicator of internal consistency, was found as .86.

Basic components analysis was employed for the factor analysis which was conducted so as to determine the construct validity of the scale. Kaiser-Meyer-Olkin (KMO) coefficient as well as Barlett test was used to determine whether or not it was fit for the factor analysis of the data prior to the analyses. Consequently, it was found that the items of the adapted scale clustered around two sub-dimensions, as in the original scale. The analyses revealed that 47 items of the scale had two basic sub-dimensions with essence values bigger than 12. The overall variance that those factors accounted for in the scale was 23.13%. Following pilot study of the Curiosity Index, it was applied to 642 students along with LLTS. In order to determine the structural relation of the curiosity index with the dimension of "lack of curiosity" of the LLTS developed in this study, Pearson correlation coefficient was calculated. The value was found to be at the level of .67. Relation levels of both scales were not very high. The reason for that might be that curiosity index measured features similar to only one sub-dimension of the LLTS. The dimension of the scale developed which was related to curiosity was the "lack of curiosity". Therefore, the relation between that dimension and curiosity index were re-examined. Pearson correlation coefficient representing the relation between the lack of curiosity sub-dimension of LLTS and curiosity index was found to be .76. This level of relation signals that the lack of curiosity sub dimension of LLTS bears structural similarities to curiosity index and that it might have properties overlapping in terms of construct validity.

3.1.2.Construct Validity of the Scale

After generating the draft form of the LLTS, it was applied to 642 students attending the various departments and faculties of seven universities with differing properties across Turkey. Explanatory (exploratory) factor analysis was conducted so as to specify the construct validity of the data obtained from the 642 students.

Kaiser-Meyer-Olkin (KMO) coefficient as well as Barlett test was used to determine whether or not it was fit for the factor analysis of the data prior to the analyses. KMO value above 60 expresses suitability of data for analysis (Büyüköztürk, 2005: 126). The KMO value was found to be .89 in this study. This was a result showing that the data were quite fit for factor analysis. For the factor analysis of the scale, Basic Components Analysis was used in combination with Varimax rotation, and explanatory factor analysis was carried over. In consequence, it became clear that 74 items of the scale had four basic sub-dimensions with essence value bigger than 12. The total variance that those factors accounted for was 19.26%.

Table 1. The Explanatory Factor Analysis Results of Lifelong Learning Tendency Scale

The Results of Lifelong Learning Tendency Scale Factor Analysis

	1st Faktor	2nd Faktor	3rd Faktor	4th Faktor
	Motivation	Perseverance	Lack of Regulating Learning	Lack of Curiosity
LLL74	0,69			
LLL67	0,65			
LLL70	0,58			
LLL43	0,55			
LLL64	0,54			
LLL72	0,5			
LLL65	0,47			
LLL42	0,42			
LLL48	0,36			
LLL29	0,37			
LLL38		0,69		
LLL36		0,68		
LLL39		0,64		
LLL25		0,56		
LLL30		0,45		
LLL14		0,43		
LLL66		0,39		
LLL28		0,36		
LLL55			0,65	
LLL56			0,61	
LLL73			0,6	
LLL44			0,54	
LLL54			0,54	
LLL57			0,42	
LLL69			0,32	
LLL1			0,39	
LLL33				0,74
LLL35				0,65
LLL22				0,59
LLL9				0,56
LLL31				0,54
LLL37				0,48
LLL24				0,39
LLL46				0,37

For inclusion in the scale, items with factor loads of 20 or above were selected. Items emerging in factor analysis consequence of be grouped under were observed to dimensions four sub- learning affecting lifelong positive and individuals in first factor negative ways. The dimension of explained lifelong learning", the "motivation in explained the second factor third one explained "perseverance", the learning", and the "lack of regulating "lack of curiosity". fourth explained similarities There that were put were previous research between dimensions which definitions consequence of forward (Crick et al., 2004; in 2001; Harpe and in relation to these emerged in factor analysis Litzinger et al., Radloff, 2000).

3.2. Reliability Studies of Lifelong Learning Tendency Scale

In order to determine the reliability of the scale, Cronbach alpha (∝) internal consistency was calculated. The reliability (∝) of the pre-trial scale containing 74 items was found to be .93. Another

study that was conducted for determining the reliability of the scale was to do items analysis based on the difference between top and bottom groups of 27%. Thus, items that were not significant according to the t value results were deleted from the scale.

Table 2. Item Analysis Results of LLTS

Item No	Factor Load	t Value
74	0,69	0,000
67	0,65	0,012
70	0,58	0,000
43	0,55	0,099
64	0,54	0,987*
72	0,50	0,004
65	0,47	0,360*
42	0,42	0,106*
48	0,36	0,001
19	0,37	0,056
38	0,69	0,204*
36	0,68	0,000
39	0,64	0,004
25	0,56	0,009
30	0,45	0,000
14	0,43	0,726*
66.	0,39	0,002
28	0,36	0,021
55	0,65	0,480*
56	0,61	0,000
73	0,60	0,000
44	0,54	0,000
54	0,54	0,000
57.	0,42	0,000
1	0,39	0,000
33	0,74	0,000
69	0,32	0,000
9	0,56	0,000
35	0,65	0,000
31	0,54	0,000
46	0,37	0,000
22	0,59	0,000
37	0,48	0,000
24	0,39	0,000

Another study performed in relation to the reliability of the scale was doing items analysis and calculation of the correlation coefficient between items score and scale score. In consequence, the level of affecting the scale reliability was found for each item, and items with item- total correlation below r=0.30 were deleted from the scale.

Table 3. Lifelong Learning Scale Item Total Correlations

	Scale average if item is removed	Scale variance if item is removed	Corrected item total	Cronbach alpha when item is removed

			correlation	
LLL1	332,28	1305,17	0,45	0,44
LLL9	333,32	1308,49	0,39	0,42
LLL14	332,14	1343,21	0,29	0,36
LLL19	331,86	1337,12	0,41	0,54
LLL22	333,67	1303,61	0,44	0,46
LLL24	333,12	1290,18	0,52	0,52
LLL25	332,05	1344,04	0,28	0,45
LLL28	331,74	1333,68	0,48	0,48
LLL30	332,05	1336,67	0,41	0,42
LLL31	332,5	1296,77	0,51	0,47
LLL33	332,92	1288,4	0,57	0,59
LLL35	332,59	1292,08	0,54	0,53
LLL36	332,02	1342,54	0,31	0,54
LLL37	333,26	1302,2	0,46	0,48
LLL38	332,06	1342,93	0,3	0,45
LLL39	332,02	1338,51	0,38	0,49
LLL42	331,59	1334,95	0,46	0,53
LLL43	331,65	1331,01	0,51	0,59
LLL44	332,2	1300,63	0,51	0,51
LLL46	332,85	1289,95	0,52	0,46
LLL48	332,09	1339,36	0,37	0,47
LLL54	332,58	1286,21	0,60	0,59
LLL55	331,49	1336,47	0,44	0,51
LLL56	332,15	1293,16	0,59	0,61
LLL57	332,76	1297,33	0,51	0,54
LLL64	331,58	1336,07	0,46	0,54
LLL65	331,77	1334,03	0,44	0,48
LLL66	331,97	1340,98	0,35	0,43
LLL67	331,74	1338,31	0,4	0,52
LLL69	333,47	1311,5	0,41	0,44
LLL70	331,93	1331,1	0,48	0,60
LLL72	331,63	1332,56	0,50	0,57
LLL73	332,62	1306,8	0,40	0,47
LLL74	331,77	1334,77	0,45	0,60

The Cronbach alpha internal consistency (∝) of the ultimate form of the scale containing 27 items was found as .89, which demonstrated that the scale was highly reliable. The items included in the ultimate scale following analyses and scale sizes are shown in Figure 1.

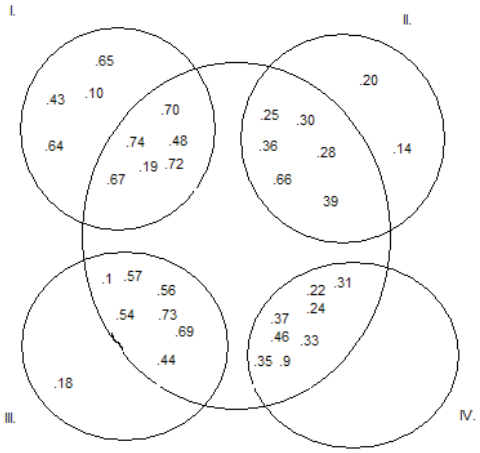

Figure 1. Dimensions of LLTS

As is clear from Figure 1, items with insufficient validity coefficients were excluded from the ultimate scale, and thus items trying to discover basically a certain property in various dimensions were used. First two dimensions were those which contained positive items representing motivation and efforts concerning lifelong learning whereas final two dimensions were those which contained negative items for failing to regulate lifelong learning and for expressions about lack of curiosity. In analysing the scale items, this case was considered and scoring was done by reversing the items of the final two sub-dimensions. The responses to the scale items were in the form of likert type grading scale as: "1 very suitable", "2 partly suitable", "3 very slightly suitable", "4 very slightly not suitable", "5 partly is not suitable", "6 not suitable".

4. Conclusion and Discussion

The aim of this research is to develop a scale to determine University students' lifelong learning tendencies. Curiosity index Version 3, which was developed by Erwin (1998) was used for the fit validity of the scale. The scale, which was originally in English, was adapted into Turkish for this research. The original and Turkish forms of the translated "curiosity index" were applied to a group of 36 students ever two weeks, and the adaptation work was conducted. Cronbach alpha value, which represented the reliability of the scale, was found as .86. Following the factors analysis, it was found that the scale was composed of the dimensions of "depth" and "breadth", as the original scale was. After conducting the pilot study of curiosity index, it was applied along with lifelong learning tendencies scale. In order to determine the structural relations of the curiosity index with the dimension of "lack of curiosity" of the LLTS developed in this study, Pearson correlations coefficient was calculated. It was seen that Pearson correlations coefficient was at the level of .67. Neither of the scales had very high levels of relations. However, because it was claimed that curiosity index measured the same properties as only one sub-dimension of the Lifelong Learning Tendencies Scale, the current level of relations was considered sufficient.

The pre-trial form of the scale was applied to 642 university students and explanatory factor analysis was conducted so as to determine the construct validity on the data. Kaiser-Meyer-Olkin (KMO) coefficient as well as Barlett test was used to determine whether or not it was fit for the factor analysis of the data prior to the analyses. The KMO value was found to be .89. In consequence, it became clear that 74 items of the scale had four basic sub-dimensions with essence values bigger than 12. The first factor explained the dimension of "motivation in lifelong learning", the second factor explained "perseverance", the third one explained "lack of regulating learning", and the fourth explained "lack of curiosity". There were similarities between definitions that were put forward in previous research in relation to this dimension which emerged in consequence of factor analysis.

94 items which were in the items pool previously were reduced to 74 pursuing expert opinions. After the application of the 74-item trial form, factors analysis was conducted, and reliability study was performed for 34 items with factor load of 20 and above. Consequently, items which were not significant according to t value results were removed from the scale, total correlations were calculated for each item, and Cronbach alpha internal consistency of the ultimate 27-item scale was found to be .89.

Another study that was conducted for determining the reliability of the scale was to do items analysis based on the difference between top and bottom groups of 27%. Thus, items that were not significant according to the t value results were removed from the scale. Besides, items analysis was also performed for the reliability of the scale and correlation coefficients between item scores and scale scores were also calculated. In consequence, the level of affecting the scale reliability was found for each item, and items with item- total correlation below r=0.30 were removed from the scale. Following the analyses, the ultimate scale with 27 items and four sub-dimensions was reached.

The dimensions of lifelong learning scale were specified as motivation (6 items), perseverance (6 items), lack of regulating learning (6 items), and lack of curiosity (9 items). 27 items were available in the scale. In the general

average of the scale, the minimum score was (27x1) 27, mid score was (27x3.5) 94.5, and the maximum score was (27x6) 162.

Based on the findings concerning the reliability and validity analyses of the LLTS, it may be said that the scale can be used in a valid and reliable way so as to determine students' lifelong tendensies. It is believed that using this scale in research into lifelong learning will contribute to the field. As Arıcak and Ilgaz (2007) point out, in order for a scale to be of high quality and beneficial, it should be used in various research attempts and for different samples on different occasions, and validity and reliability investigations should be conducted; which will contribute not only to the scale but also to the field considerably. Therefore, work to be done on different samples will also be beneficial for the reliability and validity of the scale.

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