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Teacher's E-learning Readiness Scale (TELRS): Development and Validation

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Abstract :- *The aim of this paper was to develop and validate Teacher's E-learning readiness scale by following Likert technique. The steps followed for the development and validation this scale were planning, try-out, scoring, item analysis, reliability, validity, percentile norms and interpretation of raw scores. Initially, 84 likert-type items were written in both the languages i.e. Hindi and English for the first draft covering 8 areas i.e. Psychological Readiness, Technological Readiness, Perceived Usefulness, Student Readiness, Management Support, School Culture Preference to meet face to face and Infrastructure . These items were presented to 20 experts of Education, Computer Science and Information Technology and Language and on the basis of their unanimity, 43items were retained in the second draft. The retained items were administered to 100 teachers from government primary schools of Uttarakhand state of India, selected by using simple random method. Finally, 't' test was applied to find out the item discriminating value between 27% lower and 27% upper group and also inter-correlations were calculated among them. The items having significant 't' values were selected whereas others were rejected. Only 33 items in both the languages i.e. Hindi and English were retained in the final draft with 6 dimensions. Cronbach's Alpha method was used to calculate its reliability and found 0.921. That indicated the scale is highly reliable. The scale was validated against the face, content and construct validity. Percentile norms were prepared for classifying the teachers as High, moderate and low readiness for e-learning.*

Key words : E-learning Readiness, Item analysis, Reliability, Validity, Norms

Introduction :

The emergence and development of ICT and its application in education systems have given rise to a new wave of evolution in the world's educational systems; this has pushed the current learning systems toward e-learning and made it an important teaching tool (Alhabeeb and Rowley, 2018). Within the domain of educational studies, the terms such as "electronic learning", "online learning", "learning portal", "Massive Online Courses", "I-Learn" or "E-learning" have been used interchangeably. Despite the variety of terminologies, the term "E-learning" is considered the most popular and widely used (Osman,Wahid and Zakariya, 2018).

E-learning

E-learning has been defined as "an educational method that facilitates learning by the application of information technology and communication providing an opportunity for learners to have access to all the required education programmes," (Golband *et al.* , 2014).

Oztekin (2013) defined e-learning as electronic learning that utilizes electronic communication for teaching and learning designed to be applied from a distance. E-learning is an electronic learning using a variety of digital communication devices that can be used to conduct teaching and remote communication (Hadining, Sukanta, & Hidayat, 2019).

In simple words, E-learning is defined as the utilization of ICT to support teaching and learning processes, by merging traditional and online environments. Electronic learning (e-learning) has introduced significant innovation for educational environments in the twenty-first century, benefiting from web-based communication, collaboration, multimedia and information transfer (Motaghian, Hassanzadeh, & Moghadam, 2013). With help of this, teaching and learning content can be managed through various learning activities and the quality of teaching and learning can be enhanced. E-learning environment multiply student learning by providing a broader source of interaction, making course content more accessible, providing automated and adaptable assessment styles, and improving technology literacy (Ergun and Adibatmaz, 2020).

E-learning is playing a significant role during the COVID-19 pandemic also. Because presently, it is not a choice but a necessity (Mehdiazadeh, *et al*, 2012)and most of the teaching and learning activities are conducting by e-learning directly and indirectly. E-learning platforms can help educational institutions to control, plan, convey and track the teaching and learning processes (Martins & Baptista, 2016). To get above said benefits of e-learning , we should consider also the factors that effect e-learning. Teacher is still very important role in imparting knowledge through e-learning . If teacher is ready to adapt e learning in his teaching and learning then outcome will be fruitful and vise- versa. However, applying E-learning in teaching and learning processes without any considerations relating the teachers' readiness might reveal the other issues. Therefore, investigating the readiness of the teachers becomes compulsory (Pusparini, Santosa and Mayartawan,2017, Kolo and Zuva, 2018)

E-learning readiness

According to Hashim and Tasir (2014), E-learning readiness is defined as users' physical and mental preparedness to adopt or implement a new learning environment and alternative technology. Additionally, Kisanjara (2014) states that readiness is built by the ability of the teachers to integrate Information and Communication Technology (ICT) to support the learning processes and the ability of students to work independently.

Inan and Lowther (2010) defined e-learning readiness of teachers as teachers' perceptions of their capabilities and skills required to integrate technology into their classroom instruction, and teachers' readiness to integrate technology which is the most important factor that has a direct impact on technology integration.E-Learning Readiness or also referred to E-readiness is the degree of readiness by individual that has regarding the attributes or variable that affects the success of distance learning (Suwarsono, 2015)

Hence, it is important to assess e-learning readiness of teachers in order to implement and adapt e-learning to be successful (Persico *et al*., 2014). Accurate measurement of teachers' e-learning readiness needs a suitable tool. So investigator reviewed previous available e-learning readiness tools and unfortunately could not found suitable for measurement of e-learning readiness of government primary school teachers of Uttarakhand. The scale was standardized by the investigators themselves for the sake of modification as there was found a need to improve the scales developed earlier and make this scale valid.

Purpose of the scale

Teachers e-learning readiness scale was developed with the purpose to know the level of e-learning readiness among the teachers of government primary schools of Uttarakhand , India.

Target population

The teachers teaching in government primary schools (from class-1 to 5) of Uttarakhand area formed the target population.

Objectives of the Scale

- To develop the e-learning readiness scale.
- To validate the e-learning readiness scale.

Need for the development of Teacher's E-learning readiness scale

For the construction of scale, literature on e-learning readiness of persons, Chapnick (2000), Borotis and Poulymenakou (2004), Psycharis (2005), Lopes (2007) , Keramati *et al* (2011), Akaslan and Law (2011), Darab, and Montazer (2011), and Alshaher (2013) were reviewed but the researchers did not find these scales appropriate for targeted population because most of these scales were developed and standardized in foreign places. Moreover, the items undertaken in these scales were not framed to Uttarakhand's government primary teachers' point of view from whom the data was to be collected for the present study. Therefore to fulfill the requirement of appropriate e-learning readiness scale, a need was felt to construct a scale especially for assessing e- learning readiness of government primary school teachers of Uttarakhand.

Procedure for development of the scale

To achieve the objective of the present scale, different steps were followed to develop and standardize the scale: Planning and preparation, first try-out, second try-out, final form of the scale, item analysis, reliability, validity, percentile norms preparation and Interpretation of raw scores as shown in figure-1given below:

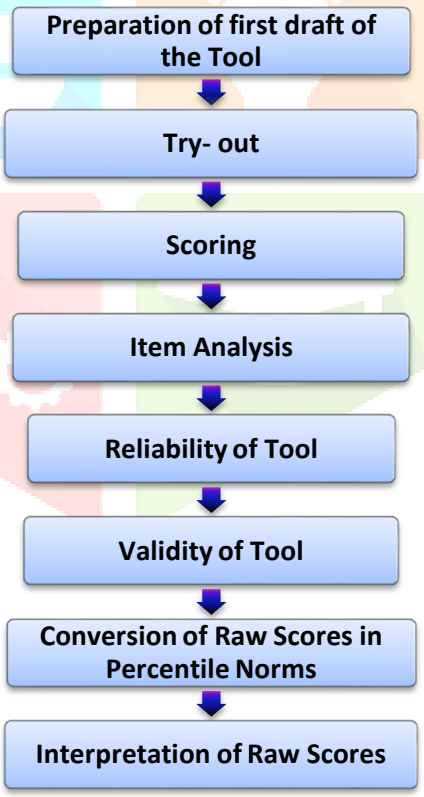

Figure-1: Steps for development and standardize the Teachers E-learning Readiness Scale

Planning of the scale

The investigator went through the various scales available on the similar variables and discussed the concept of e-learning readiness with the experts in the field of education, psychology and computer science. Keeping in view the discussion by the experts the broad and specific objectives for the construction of the scale were specified in clear terms. Due consideration was given to the limitations under which the scale had to be developed. These considerations include a detailed set of specifications like the purpose of the scale, the time, cost and sources at the disposal. The nature of the population for which the scale has to be constructed was also

defined. The length of the scale, type and nature of items and method of scoring the scale were also planned in advance. A fixed specific procedure was followed in a planned way.

Preparation of the first draft of scale

The present scale was planned to write statements in English and Hindi languages and administer to teachers at all level. The nature of the scale was Likert-type i.e. the responses of the items were expressed in terms of the following five categories: Completely disagree, Strongly disagree, Not sure, Strongly agree and Completely agree.

Items relating teacher's e-learning readiness were identified and selected after scanning earlier scales developed by various authors as Aydın and Tasci (2005), So and Swatman (2010), Akaslan and Law (2011), Darab and Montazer (2011), and Trayek *et. al* (2014). Keeping the areas of e-learning readiness in mind, 82 items were written in preliminary form covering the following areas as dimensions given below and presented in the table 1

Table :1- Dimensions of Teachers' E-learning Readiness Scale in first draft

S.N.	Dimensions of teachers e-learning readiness scale	No. of items
1.	Psychological Readiness	18
2.	Technological Readiness	18
3.	Perceived Usefulness	08
4.	Student Readiness	10
5.	Management Support	08
6.	School Culture	08
7	Preference to meet face to face	08
8	Infrastructure	04
Total items		**82**

First Try-Out

It was decided to write some items under each dimension. Initially, 82 items (in both English & Hindi versions) were written for the entire scale. These items were given to 20 judges belonging to the fields of Education, Psychology, Computer Science and Language for further rating. On the basis of unanimous decision of experts and scholars, 43 items and 7 dimensions were retained for second draft as shown the table 2.

Table:2- Dimensions and number of items in the first and second draft of e-learning readiness scale

S.N.	Dimensions of teachers e-learning readiness scale	No. of items in first draft	No. of items in second draft
1.	Psychological Readiness	18	12
2.	Technological Readiness	18	12
3.	Perceived Usefulness	08	04
4.	Student Readiness	10	06
5.	Management Support	08	04
6.	School Culture	08	03
7	Preference to meet face to face	08	02
8	Infrastructure	04	00
	Total items	**82**	**43**

Second Try-Out

In order to determine item analysis and homogeneity of the items, the prepared scale was administered to a randomly selected sample of 100 primary school teachers of Uttarakhand.

Administration of the scale

Before handing out the scale, the subjects were told that new scale was going to be developed which required cooperation and sincerity in answering to statements written in the scale. They were told that there were no right or wrong answer and asked to respond to the items by encircling the appropriate number at the right that best describes your current belief, based on the following rating scale. The five responses are Completely disagree, Strongly disagree, Not sure, Strongly agree and Completely agree. After establishing the rapport, subjects were provided the scale. In this way, the investigator collected the responses from teachers of selected of government primary schools of Uttarakhand.

Scoring procedure

Teacher's E-learning readiness scale was a self-reporting five point scale. Items of the scale were in statement form followed by five alternatives. The teacher had to mark a circle on number given against each statement. To score the scale the positive responses were credited 1, 2, 3, 4, 5 and for negative statements responses were credited 5, 4, 3, 2, 1 from Completely disagree to Completely agree. The scores to be awarded for different alternative are given below in table 3.

Table:3 - Scoring pattern for positive and negative items responses

Items	Completely Disagree	Strongly Disagree	Not Sure	Strongly Agree	Completely Agree
Positive items	**1**	**2**	**3**	**4**	**5**
Negative items	**5**	**4**	**3**	**2**	**1**

Item analysis

The scale was administered to a randomly selected sample of 100 teachers (male and female) from the government primary schools of Uttarakhand. Subjects were requested to respond to each item and the responses of the items were expressed in terms of the following five options: **Completely disagree, Strongly disagree, Not sure, Strongly agree and Completely agree.** To score the scale the positive items were credited 1, 2, 3, 4, 5 and for negative items responses were credited 5, 4, 3, 2, 1 from Completely disagree to Completely agree.

Firstly, all the 100 response sheets were arranged in ascending order. On the basis of the total scores of the subjects, the two groups were selected- 27% high score group and 27% low score group and subjected to t-test computation. Only those items which were found significant either at 0.05 level or 0.01 level of significance

were retained. It is clear from table-4, that t-values of item numbers: 4, 5, 18, 26, 28, 41, 42 and 43 were not significant at the 0.05 level.

Table:4- Mean differences between lower 27% and upper 27% items of teacher's e-learning Readiness scale

Item No.	Group	Mean	t-values	Item No.	Group	Mean	t- values	Item No.	Group	Mean	t-values
1	Upper	4.741	5.354	**16**	Upper	3.185	2.680	**31**	Upper	3.815	7.392
	Lower	3.185			Lower	2.111			Lower	1.741	
2	Upper	4.481	4.790	**17**	Upper	3.704	4.616	**32**	Upper	3.185	5.366
	Lower	3.074			Lower	2.000			Lower	1.556	
3	Upper	4.556	3.524	**18**	Upper	3.037	**1.580***	**33**	Upper	3.963	3.685
	Lower	3.667			Lower	2.407			Lower	2.889	
4	Upper	3.889	**1.896***	**19**	Upper	4.296	7.077	**34**	Upper	3.333	4.050
	Lower	3.185			Lower	2.222			Lower	2.074	
5	Upper	4.630	**1.901***	**20**	Upper	4.630	6.973	**35**	Upper	3.185	3.309
	Lower	4.190			Lower	2.704			Lower	2.000	
6	Upper	4.889	4.439	**21**	Upper	4.481	7.833	**36**	Upper	4.704	3.918
	Lower	3.556			Lower	2.481			Lower	3.556	
7	Upper	4.444	8.213	**22**	Upper	4.704	6.613	**37**	Upper	3.704	4.515
	Lower	2.407			Lower	3.037			Lower	2.519	
8	Upper	3.890	3.780	**23**	Upper	4.444	8.403	**38**	Upper	3.704	4.890
	Lower	2.556			Lower	2.185			Lower	2.148	
9	Upper	4.630	7.935	**24**	Upper	4.297	7.390	**39**	Upper	4.333	4.021
	Lower	2.630			Lower	2.074			Lower	3.037	
10	Upper	4.704	4.392	**25**	Upper	4.852	5.200	**40**	Upper	4.296	3.560
	Lower	3.481			Lower	3.519			Lower	3.148	
11	Upper	4.815	2.778	**26**	Upper	3.259	**0.561***	**41**	Upper	4.148	**1.267***
	Lower	4.074			Lower	3.037			Lower	3.741	
12	Upper	4.630	5.576	**27**	Upper	4.741	3.647	**42**	Upper	1.481	**0.921***
	Lower	3.037			Lower	3.926			Lower	1.296	
13	Upper	4.037	6.319	**28**	Upper	4.556	**1.644***	**43**	Upper	2.704	**1.850***
	Lower	2.000			Lower	4.111			Lower	1.963	
14	Upper	4.296	4.799	**29**	Upper	3.815	4.246				
	Lower	2.778			Lower	2.222					
15	Upper	4.296	6.495	**30**	Upper	3.889	6.998				
	Lower	1.963			Lower	1.889					

*** Value is not significant at 0.05 level so item excluded**

Thus out of 43 items, 08 items were rejected and 35 items were retained**.** The items under Preference to meet face to face were excluded as they were not found to be significant. Therefore, only 6 dimensions were retained in the scale

Table: 5- Corrected item-total correlation of items of Teachers E-learning Readiness Scale

S.N.	Item No	Corrected Item-Total Correlation	Remark	S.N.	Item No	Corrected Item Total Correlation	Remark
1	**1**	0.540	Selected	**19**	**22**	0.609	Selected
2	**2**	0.558	Selected	**20**	**23**	0.615	Selected
3	**3**	0.290	Selected	**21**	**24**	0.614	Selected
4	**6**	**0.181**	**Rejected**	**22**	**25**	0.533	Selected
5	**7**	0.629	Selected	**23**	**27**	0.302	Selected
6	**8**	0.374	Selected	**24**	**29**	0.447	Selected
7	**9**	0.611	Selected	**25**	**30**	0.563	Selected
8	**10**	0.435	Selected	**26**	**31**	0.633	Selected
9	**11**	**0.097**	**Rejected**	**27**	**32**	0.488	Selected
10	**12**	0.496	Selected	**28**	**33**	0.409	Selected
11	**13**	0.550	Selected	**29**	**34**	0.460	Selected
12	**14**	0.393	Selected	**30**	**35**	0.241	Selected
13	**15**	0.548	Selected	**31**	**36**	0.235	Selected
14	**16**	0.408	Selected	**32**	**37**	0.436	Selected
15	**17**	0.493	Selected	**33**	**38**	0.396	Selected
16	**19**	0.664	Selected	**34**	**39**	0.470	Selected
17	**20**	0.534	Selected	**35**	**40**	0.444	Selected
18	**21**	0.629	Selected				

It is clear from the table 5 item numbers 4 and 9 have very low corrected item total correlation values, so both were excluded from final draft. The final draft of the scale consisted of 33 items (in both English & Hindi versions) under six dimensions i.e. Psychological Readiness, Technological Readiness, Perceived Usefulness, Student Readiness, Management Support and School Culture .

In the final version, 33 items (in both English & Hindi versions) were retained covering six dimensions and the distribution of items for each subscale is given in the table -6 and Figure-2.

Table:6- Dimensions and items of Teachers E-learning Readiness Scale in the final form

TELRS Dimensions	Item numbers	Total Items
Psychological Readiness	1, 2, 3, 4, 5, 6, 7, 8,	**08**
Technological Readiness	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,	**11**
Perceived Usefulness	20,21	**02**
Student Readiness	22, 23, 24, 25, 26, 27	**06**
Management Support	28, 29, 30, 31,	**04**
School Culture	32, 33	**02**
	Total	**33**

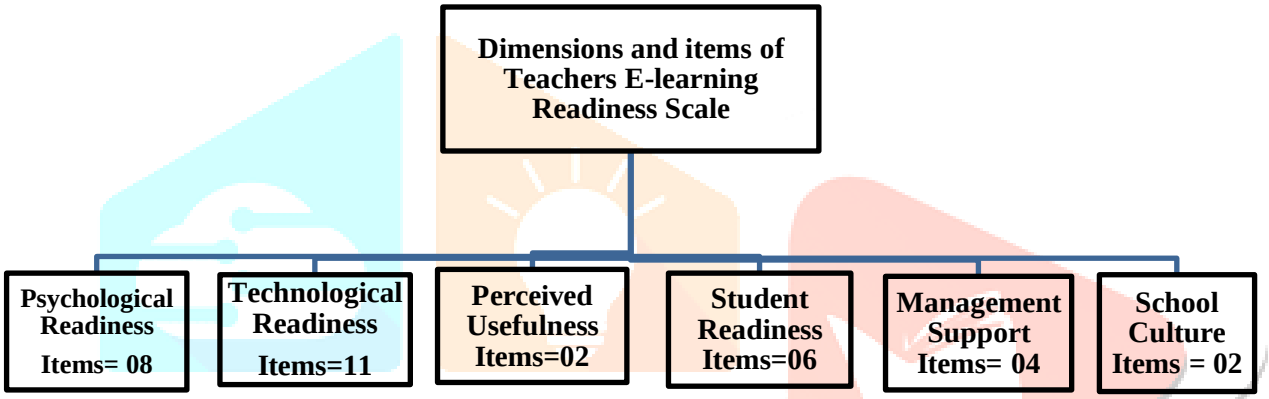

Figure: 2-- Dimensions and items of Teachers E-learning Readiness Scale in the final form

Reliability

Cronbach's Alpha is a test reliability technique that requires only a single test administration to provide a unique estimate of the reliability for a given test. The value of Cronbach's Alpha Coefficient normally ranges from 0 to 1. The closer is this value to 1.0, the greater is the internal consistency of the items included in the scale.

The reliability of the E-learning readiness scale when computed in form of Cronbach's Alpha was found to be 0.921 for 33 statements included in 6 dimensions. This value indicates that the E-learning readiness scale has high internal consistency. So it can be concluded that the e-learning readiness scale is reliable. Reliability of each dimension of e-learning readiness scale is given in table 7.

From the values of Cronbach's Alpha given in table 7, it is evident that the scale possessed adequate internal consistency therefore it was considered reliable for administration.

Table:7 - Cronbach's alpha values of six dimensions of Teachers E-learning Readiness Sale

S.N.	Dimension wise / Total reliability	Number of items	Cronbach's alpha
1	Psychological Readiness	N= 08	0.817
2	Technological Readiness	N=11	0.898
3	Perceived Usefulness	N=02	0.687
4	Student Readiness	N=06	0.814
5	Management Support	N=04	0.610
6	School Culture	N=02	0. 624
	Total	**N= 33**	**0.921**

Validity

The content, face and construct validity were established for teacher's e-learning readiness scale.

(i) Face Validity

The unanimity of 20 judges about the items was taken as an indicator of face validity of the scale. For content validity, the dimensions were administered to twenty experts to assess the relevancy of the items to the category to which they belong. Items having 80% of agreement were selected.

(ii.) Content Validity: For content validity, the items were administered to twenty experts to assess the relevancy of the items for tool. However, according to Lawshe, if more than half the experts indicate that an item is essential, the item has at least some content validity. Lawshe developed a formula termed as 'content validity ratio' as follows:

$$\boldsymbol{CVR}=(\boldsymbol{Ne}-\boldsymbol{N/2})/\,(\boldsymbol{N/2})$$

where, **CVR** = Content validity ratio

Ne = Number of subject matter experts indicating the item essential

N = Total number of Subject matter experts

This formula yields value, which range from +1 to -1. A positive value indicates that at least half the Subject matter experts rated the item as essential. The CVR formula was applied to the items in the tool and decision for each item was taken which is shown in Table 8.

Table: 8- Content validity ratio of items of Teachers E-learning Readiness Scale

Item number	Ne	N	CVR	Decision	Item number	Ne	N	CVR	Decision
1	12	20	0.2	Included	**18**	13	20	0.3	Included
2	14	20	0.4	Included	**19**	13	20	0.3	Included
3	13	20	0.3	Included	**20**	14	20	0.4	Included
4	17	20	0.7	Included	**21**	18	20	0.8	Included
5	16	20	0.6	Included	**22**	11	20	0.1	Included
6	14	20	0.4	Included	**23**	14	20	0.4	Included
7	15	20	0.5	Included	**24**	13	20	0.3	Included
8	13	20	0.3	Included	**25**	16	20	0.6	Included
9	18	20	0.8	Included	**26**	15	20	0.5	Included
10	17	20	0.7	Included	**27**	12	20	0.2	Included
11	16	20	0.6	Included	**28**	13	20	0.3	Included
12	15	20	0.5	Included	**29**	14	20	0.4	Included
13	14	20	0.4	Included	**30**	15	20	0.5	Included
14	15	20	0.5	Included	**31**	17	20	0.7	Included
15	12	20	0.2	Included	**32**	16	20	0.6	Included
16	14	20	0.4	Included	**33**	12	20	0.2	Included
17	15	20	0.5	Included					

It is clear from the table 8, that the each item have positive CVR, hence all the items of teachers e-learning readiness scale have content validity.

(iii). Construct Validity

The correlation coefficients between the dimensions of Teachers e-learning readiness scale ranged from 0.227 to 0.515. The obtained 'r' values indicate high construct validity of the scale as given in table 9.

Table :9- Inter-correlations among the Dimensions of the E-learning Readiness Scale

Dimensions	PR	TR	PU	SR	MS	SC
PR	1					
TR	**0.510**	1				
PU	0.445	**0.428**	1			
SR	0.467	0.543	**0.327**	1		
MS	0.310	0.309	0.234	**0.449**	1	
SC	0.515	0.351	0.448	0.490	**0.257**	1

****Correlation is significant at the 0.01 level (2- tailed)**

Percentile norms and interpretation of scores:

For the purpose of interpretation of the raw scores, percentile norms have been prepared to measure the level of E-learning readiness among government primary teachers and presented in the table 10. The minimum and maximum obtained score of this scale was 55 and 155 respectively. The teachers can be categorised in accordance with the raw scores. Those who scored low (101 and below) in the scale were indicated low e-learning readiness and high score (127 and above) indicated high e-learning readiness. In between (102 to 126), there was found moderate e-learning readiness as shown below in the table 11.

Table:10- Conversion of raw scores in percentile norms

Percentile	Scores
90	141
80	128.8
75	126.8
70	124
60	118.6
50	115
40	110
30	104.6
25	101.3
20	96.2
10	82.4

Table:11: Interpretation and classification of raw score into various level of e-learning readiness

Range	Interpretation
127 and Above	High E-learning readiness
Between 102 to 126	Moderate E-learning readiness
101 and below	Low E-learning readiness

Conclusion `

In this paper, the procedure for the development and validation of Teacher's E-learning Readiness Scale(TELRS) has been briefly described as it has been found an important area for the researchers, educationalists and policy makers. They can use this tool for measurement of E-learning readiness of government primary school teachers of Uttarakhand. TELRS can be the basis of new tool for measurement of e-learning readiness of teachers of higher classes because paper helps in understanding to follow the steps for Construction and standardization of new tool. Tubaishat and Lansari (2011) observed that the evaluation of e-learning readiness is critical for the successful implementation of e-learning as a platform for various learning environments. Success in e-learning can be achieved by understanding the needs as well as the readiness of all stakeholders in a particular e-learning environment (Nawani and Ansari, 2020, Ncube, Dube and Ngulube, 2014). Broadley (2007) observed that teacher's perception and attitude towards e-learning also play a critical role in e-learning implementation.

Teacher is one of the most important and unique stakeholder of Education system and teachers' e-readiness assessments can serve as a guide on what interventions and policies to take to realistically achieve the institutions' goals in teaching and learning. The level of e-readiness can also provide an edge to effectively use ICT to create new opportunities for its learners over those that are not e-ready (Goh and Blake, 2020). So researchers developed the Teachers e-learning readiness scale for government primary school teachers of Uttarakhand, India. It is an assessment Scale which researchers can use to determine the status of e- learning readiness among teachers.

References

Akaslan, D., & Law, E.L.C. (2011*)*. Measuring teachers' readiness for e-learning in higher education institutions associated with the subject of electricity in Turkey, *Global Engineering Education Conference (EDUCON)* 2011, (pp. 481-490), IEEE. doi: 10.1109/EDUCON. 2011.5773180.

Alhabeeb, A., & Rowley, J. (2018). E-learning critical success factors: Comparing perspectives from academic staff and students. *Computer and Education*,127, 1-12.

Alshaher, A. (2013). The Mckinsey &s Model Framework for E-learning System Readiness Assessment. *International Journal of Advances in Engineering & Technology*, 9(5), 1948-1966.

Aydın, C., H., & Tasci, D., (2005). Measuring Readiness for e-Learning: Reflections from an Emerging Country. *Educational Technology & Society*, (8)4, 244-257.

Broadley, T.(2007). Implementation of e-learning: A Case Study of Three Schools, Curtin University of Technology. Retrieved online on 21-06-21, from ttp://www.aare.edu.au/07pap /bro07340.pdf.

Borotis, S., & Poulymenakou, A. (2004). E-learning readiness components: Key issues to consider before adopting e-learning interventions. *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, 2004(1), 1622–1629).

Chapnik, S. (2000). Are you ready for e-learning, ASTD's online Magazine All About Learning, 9.

Darab, B., & Montazer, G. (2011). An eclectic Model For Assessing E-learning Readiness I The Iranian Universities. *Computers & Education*, 56(3),900-910.

Ergun, E., & Adıbatmaz, F., B., K.(2020). Exploring the Predictive Role of E-Learning Readiness and E-Learning Style on Student Engagement. *Open Praxis*,12(2*)*,175-189.

Goh, P.,S., C., & Blake, D.(2021) . E-readiness measurement tool: Scale development and validation in a Malaysian higher educational context, *Cogent Education*, 8(1),1-24. 1883829, DOI: 10.1080/2331186X.2021. 188382

Golband, F., Hosseini, A.F., Mojtahedzadeh, R., Mirhosseini, F., & Bigdeli, S.(2014). The correlation between effective factors of e-learning and demographic variables in a post-graduate program of virtual medical education in Tehran University of medical sciences. *Acta Med Iran*, 52, 860–4.

Hadining, A.F., Sukanta, & Hidayat, W.(2019, March5-7). An investigation of student perspective for e-learning readiness measurement. Proceedings of the International Conference on Industrial Engineering and Operations Management Bangkok, Thailand.

Hashim, H., & Tasir, Z. (2014). E-learning readiness: A literature review. *Proceedings - 2014 International Conference on Teaching and Learning in Computing and Engineering*, 267– 271. LATICE. https://doi.org/10.1109/LaTiCE.2014. 58

Inan, F., A., & Lowther, D., L. (2010) Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development*, 58(2), 137-154.DOI: 10.1007/s11423-009-9132-y \

Keramati, A., Afshari, M., M., & Kamrani, A. (2011). The Role of Readiness Factors in E- learning Outcomes: An empirical Study., *Computers & Education,* 57(3), 1919-1929.

Kisanjara, S., B. (2014). Students' attitudes and readiness assessment towards E-Learning in higher learning institutions. *International Journal of Engineering Research and Technology*, 3(1), 3155– 3167.

Kolo, I. and Zuva, T. (2018*).* Comparison Between the e-Learning Readiness of Educators and Learners in South African Schools, *International Conference on Intelligent and Innovative Computing Applications (ICONIC)*, 6-7 Dec. 2018, (pp.1-6), IEEE doi: 10.1109/ICONIC.2018. 8601266.

Lopes, C., T. (2007). Evaluating *e-learning readiness in a health Sciences higher education institution.* Available at http://www.iadis.net/dl/final_uploads/20071 lL008.pdf. (accessed 04 June 2021).

Martins, J.,T., & Baptista, N., M.(2016). Academics' e-learning adoption in higher education institutions: a matter of trust. *The Learning Organization,* 23(5), 299-331.

DOI: 10.1108/TLO-05-2015-0034.

Mehdizadeh, F., Mehdizadeh, H., Sarmadi, M., Azizi, M. & Allaei, M.(2012). A study on electronic learning readiness of faculty Members of western Iran's medical universities. *Journal of Ilam university of medical sciences*, 19(4), 62-69. https://www.sid.ir/en/journal/ ViewPaper. aspx?id=260141

Motaghian, H., Hassanzadeh, A., & Moghadam, D., K. (2013). Factors affecting university instructors' adoption of web-based learning systems: Case study of Iran. *Computers & Education*, *61*(1), 158–167. https://doi.org/10.1016/j.compedu.2012.09.016

Navani, Y., & Ansari, M., A.(2020). Assessing e-Learning Readiness of University Faculty in India. *Advances in Computer Science and Information Technology (ACSIT),* 4(3),209-214.

Ncube, S., Dube, L., & Ngulube, P.(2014). E-learning Readiness among Academic Staff in the Department of Information Science at the University of South Africa. Mediterranean Journal of Social Sciences, 5(16), 357-366.

Osman, M., A., F., Wahid, A., K., & Zakria, A., R.(2018, September 15). Assessment of Factors Affecting E-learning: Preliminary Investigation Conference: 1st International Conference on Open Library to Open Society Sukhotai Thammatirat Open University, Nonthaburi, Thailand.

Oztekin, A., Delen, D., Turkyilmaz, A., & Zaim, S.(2013). A machine learning-based usability evaluation method for e-learning systems. *Decision Support Systems*, **56**, 63-73.

Persico, D., Manca, S., & Pozzi, F. (2014). Adapting the technology acceptance model to evaluate the innovative potential of e-learning systems. *Computers in Human Behavior*, 30, 614–622.

Psycharis, S. (2005). Presumptions and Action Affecting an E-learning Adaptation by the Education System : Implementation Using Virtual Private Networks. *Europan Journal of Open and Distance Learning*, 2.

Pusharini, K.,S., Santosa, M., H., & Myartawan, I., P., N., W.(2017) An Investigation on Teachers' E-learning Readiness toward E-learning Implementation in Public Senior High Schools in Singaraja, Bali, Indonesia. *Jurnal Pendiddikan Bahasa Inggris Undiksha,* 5(2), 1-10.

So, T., & Swatman, P., M., C. (2006) . E-Learning Readiness of Hong Kong Teachers. In Lau, B., T., & Sim, C., H. (2008). Exploring the extent of ICT adoption among Secondary School Teachers in Malaysia. *International Journal of Computing & ICT Research,* 2(2), 19-36.

Suwarsono, L.,W.(2015). Pengukuran e-learning readiness Pada Mahasiswa Teknik Universitas Telkom. *Psympathic: Jurnal Ilmiah Psikologi*, 2(2), 141-152.

Trayek, F., A., A., Ahmad, T., B., T., & Nordin, M., S.(2014). E-learning readiness and its correlates among secondary school teachers in Nablus, Palestine. *Recent Trends in Social and Behaviour Sciences,* 20(1), 229-234.

Tubaishat, A., & Lansari. A. (2011). Are Students Ready to Adopt E-learning? A Preliminary E-readiness Study of a University in the Gulf Region. *International Journal of Information and Communication Technology Research,* 1(5), 210-215.