

The Development of Online Learning Readiness Scale for Junior Students (OLRS-J) in Taiwan

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Abstract: This research seeks to develop the Online Learning Readiness Scale for Junior Students (OLRS-J) for 4-12 graders to measure their readiness for online learning. The authors first revised the existing Online Learning Readiness Scale by conducting intensive in-depth interviews. Secondly, the Fuzzy Delphi Method (FDM) was used for peer-review to establish the scale content validity. The dimensions, exemplary items, and future research work of the OLRS-J are presented and discussed in this paper.

Keywords: Online learning readiness, Fuzzy Delphi Method, Grade 4-12 students

1. Introduction

The pandemic of COVID-19 in 2020 has changed the way how people live, learn and communicate worldwide. Students around the world from kindergarten to higher education must go online to continue their formal education. For example, from mid-May to late June in 2021, Taiwan government decided the “suspension of classes without suspending learning” policy, asking all students to stay home to take online learning as the sole formal learning method. Facing this new policy, are students—from elementary to university—ready to do the online learning?

Online learning as one of the instructional/learning channels has been adopted and implemented for learners in higher education as well as life-long education for decades. Past research has also focused on these more-mature students’ readiness for online learning. For example, Hung, Chou, Chen, and Own (2010) developed an instrument—Online Learning Readiness Scale (OLRS)—to study college students’ preparation for this relatively-new way of learning. The OLRS is comprised of five dimensions: self-directed learning, motivation for learning, computer/Internet self-efficacy, learner control, and online communication self-efficacy. The results showed there were no gender difference but higher graders had significant greater readiness in some dimensions than lower graders.

Over the past 11 years, the OLRS has been cited frequently (i.e., 246 times in WoS and 885 in Google Scholar; such as Korkmaz, 2022; Tang, et al., 2021). We as authors consider it is time to revise the scale for two reasons. First, the rapid change from face-to-face learning to online learning caused by COVID-19 not only have impacted college students but also elementary schoolers (6-12 year olds) and middle schoolers (12-18 year olds). It necessitates a boarder coverage of students by the OLRS. Secondly, the original 18 items in five dimensions in original OLRS, therefore, may not be enough for examining the readiness of elementary and middle school students. It is necessary to review/revise all dimensions and items of OLRS. Last, since the online learning platforms and social media available have grown abundantly in the past decade, examples and words in the OLRS need to be updated.

The purpose of this study is to develop a new instrument entitled “Online Learning Readiness Scale for Juniors (OLRS-J or J-Scale) for higher graders in elementary schools and middle schools. In other words, the target students of OLRS-J are 4-12 graders (i.e., children and adolescents aged 10-18 years old). This paper mainly describes the revision process: intensive in-depth interviews for more scale items and Fuzzy Delphi Method (FDM) for peer-review to establish its content validity. The up-to-date dimensions, exemplary items, and future research work will also be presented and discussed.

2. Method

2.1 In-depth Interviews

To adapt the original OLRs, the present authors—all experts in e-learning theories and practices—have brainstormed to provide more possible items. Then we conducted 6 in-depth interviews: one e-learning professor, two school teachers (one for elementary school and one for high school), two experienced parents, and one high school student. These face-to-face interviews took 30 minutes to one hour long. Interviewees were either asked to freely talk about their students' or children's online learning experience in May, or were presented by and gone through our revised scale. The results of interviews helped draft the J-scale which contains 55 items in seven dimensions. Beside the original 5, two dimensions are added: Internet device affordance (4 items) and Family support (9 items).

2.2 Fuzzy Delphi method (FDM)

The purpose of FDM questionnaire is to examine the importance and appropriateness of 7 dimensions and 55 items. Dimensions and items with consensus values higher than a threshold would be included in our final version for student questionnaire. We invited 12 experts for FDM: 4 professors in online learning, 2 parents, and 6 teachers from elementary schools, middle schools, and high schools (2 have PhD in online learning). All of them have experienced in either conducting online learning themselves, developing online learning materials, or assisting their children to do online learning. The comments from experts were for consideration of new items and word/example selection.

We adopted two triangular fuzzy numbers to calculate the consensus values for all items. Specifically, the gray zone test was suitable for evaluating the consistency of the opinions given by experts. In addition, a scree plot was served to identify the threshold and screen the less important items, which ultimately helped us to obtain the priority order of key items. In terms of the research process, we conducted two rounds of the FDM questionnaire. In the first one, 6 items did not reach the consensus; some experts also provided comments on verbal expressions, items to combine, and extra items to consider. Therefore, we had 18 revised items and 2 new items for the second round.

3. Results and discussion

After two rounds of FDM, the final version contains 51 items in 7 dimensions. Table 1 shows the dimensions and exemplary items in OLRs-J.

Table 1. *Dimensions and exemplary items*

Dimension	Exemplary item
1. Computer and Internet self-efficacy (4 items)	<ul style="list-style-type: none">• I feel confident in performing the basic functions of online tools (e.g., Google Classroom, Whiteboard, Google Jamboard, Kahoot).• I feel confident in search necessary information on the Internet (e.g., Google search).
2. Self-directed learning (6 items)	<ul style="list-style-type: none">• I can set up my learning goals.• I have more free time to arrange my learning activities since the start of online learning.
3. Learner control (in an online context) (16 items)	<ul style="list-style-type: none">• I am not distracted by other online activities when learning online (e.g., FB, IG, YouTube, web sites, online games).• I repeated the online instructional materials based on my needs.
4. Motivation for learning (in an online context) (7 items)	<ul style="list-style-type: none">• I improve from my mistakes in assignments and exams.• I am open to new ideas (e.g., online learning)
5. Online communication self-efficacy (8 items)	<ul style="list-style-type: none">• I feel confident in online communication with others effectively.

Dimension	Exemplary item
	<ul style="list-style-type: none"> I feel confident in posting/answering questions in online discussions.
6. Internet device affordance* (4 items)	<ul style="list-style-type: none"> I have enough computer equipment (e.g., desk computer, notebook, tablet, cell phone) for online learning. I have steady and enough bandwidth for my online learning.
7. Family support* (6 items)	<ul style="list-style-type: none"> My family members will help me manage online learning progress. My family members consider “suspension of classes without suspending schooling policy” very important.

*new dimensions compared to original OLRs (Hung, Chou, Chen, and Own, 2020)

As Table 1 shows, compared with original 5 dimensions in OLRs for college students, 2 dimensions are added: Internet device affordance (4 items) and Family support (6 items). In addition, OLRs-J has 16 items in the Learner control dimension, compared to 4 in same dimension for the OLRs. This addition is because literature (e.g., Korkmaz, 2022) and all experts in interviews and FDM considered this dimension to be important and critical in the success of online learning. Moreover, the J-Scale divided motivation to intrinsic motivation (4 items) and extrinsic motivation (3 items) according to motivation theory (Deci, Koestner, & Ryan, 1999). Overall, the OLRs-J has examples and words updated to meet the new development of online learning applications and student usage scenarios; its 7 dimensions and 51 items with content validity are considered more appropriate to investigate younger students' online learning readiness.

The next step of this study is to distribute OLRs-J to Taiwan sample of students in grades 4-12. By doing so, we can establish its validity and reliability, conduct cross analyses, provide implementations for educators and parents, and share the scale and results with other researchers around the world.

Acknowledgement

This study thanks all experts in interviews and FDM for their contributions to the development of OLRs-J.

References

- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668 (discussion 692-700). <https://doi.org/10.1037/0033-2909.125.6.627>
- Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, *55*, 1080-1090. <https://doi.org/10.1016/j.compedu.2010.05.004>
- Korkmaz, S. (2022). To what extent are preparatory school students ready for online learning? *Journal of Theoretical Educational Science*, *15*(2), 239-263. <https://doi.org/10.30831/akukeg.991017>
- Tang, Y. M., Chen, P. Ch., Law, K. M. Y., Wu, C. H., Lau, Y. Y., guan, J., He, D., & Ho, G. T. S. (2021). Comparative analysis of student's live online learning readiness during the coronavirus (COVID-19) pandemic in the higher education sector. *Computers & Education*, *168*. <https://doi.org/10.1016/j.compedu.2021.104211>