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Research Article:

Measuring Digital Competence: An Exploratory Study Mapping Digital Competence Profiles of Sri Lankan English Language Teachers

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ABSTRACT

The overall vision for 21st century learning has incorporated digitalisation as a key focus in teaching and learning practices. In Sri Lanka, however, despite major initiatives taken to improve digital competency of teachers, only minor improvement was noted. Using the *DigCompEdu* assessment tool, this study investigates to what extent Sri Lankan English language teachers are digitally competent. The results aim to inform national initiatives to facilitate the shift towards a bottom-up process, informed by actual realities based on skills and competences. The *DigCompEdu* 22-item quantitative survey was used to sample 40 English language teachers working within the public education system. Overall, the study finds that not even 50% of the sample is at one competency band. It is recommended that for substantial changes to occur, a more varied and individualised teacher-training is recommended, using the *DigCompEdu* as a diagnostic guide.

Keywords: Digital competence, teacher continuous professional development, *DigCompEdu*, teacher training

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INTRODUCTION

In 2015, UNESCO released their overall vision for 21st-century learning as incorporating digitalisation as a key focus in teaching and learning practices. The emerging idea advocates for a greater and more appropriate use of technology in order to promote personalisation, collaboration and communication within the contemporary educational paradigm However, local studies in Sri Lanka found that there were only minor improvements with regards to using technology in subjects other than ICT, with the integration of technology remaining stagnant only at word-processing level (Downes, 2001; Jayasooriya et al., 2016; Suraweera et al., 2017, Karunanayaka et al., 2018).

Research investigating local and global teacher perceptions show that teachers often require training and resources from industry experts for the integration of digital tools in their classrooms (Hutchison & Reinking, 2010; Juurakko-Paavola et al., 2018; Røkenes & Krumsvik, 2016). However, experts are often not familiar with the personal realities of teachers in the case of their competences in order to provide accessible and adequate supports (Rouf & Mohamed, 2017). Within the last decade, a new global approach has emerged from Finnish experts to address the concern of offering adequate support, tailor-made for specific needs and digital competences of teachers (Juurakko-Paavola et al., 2018). This is typically done by offering digital competence self-assessment tools to inform the design of accessible resources which are applicable for the teachers. Although it is still in its infancy stage of implementation, the Teacher Continuous Professional Development Model (hereinafter TCPD model) of first assessing teachers' digital competence to inform supporting materials has the potential of creating significant implications for Sri Lankan TCPD programmes, and the possible digitalisation of the Sri Lankan Education system.

The Sri Lankan Ministry of Education acts as a centralised body, having complete authority over policy, resources, and support (Perera & Canagarajah, 2010). This incorporates a top-down TCPD model, informed by investigating factors that are lacking in programmes and practice, i.e., identifying the deficits within professional infrastructures, showing a clear contrast to the Finnish bottom-up process. Kennedy (2005), defines the Sri Lankan TCPD approach as a transmission model, enabling teachers to comply with the status-quo of what is provided to them by industry experts, thus passing professional autonomy to educational authorities and experts. However, arguments arise against transmissive philosophies as it provides a *one-size-fits-all* framework when in-fact not all teachers fall under one size. Linking this idea to digital competencies, the proposition to enable teachers to first assess their own digital competencies, then, should be the first step towards providing a comprehensive professional development program that is tailor-made, individualised and personalised to the specific needs of teachers.

THEORETICAL BACKGROUND

Defining Digital Competence

Johnson et al. (1980) used the earlier term "computer literacy" to conceptualise digital competences as a set of skills that should be understood by all citizens due to its inherent benefit to society. The definition of digital competence was, therefore, formulated during this era as a set of skills enabling individuals to operate computers efficiently. This conceptualisation offers an overly simplistic view of the competence itself, interpreting it as merely a set of technical skills to be acquired. This led to the re-conceptualisation of the term 'digital competence', which is linked to a set of conditions accountable for specific stages of the digital learning process (Bawden, 2008). Bawden (2008) established four general components to act as a framework for defining the construct of digital competence. The four components include:

1. Traditional skills previously measured in earlier digital competence measurements.
2. Background knowledge as to what new information is, and how they fit into the digital world.
3. Central competences with regards to reading and understanding digital and non-digital formats, assembly of knowledge and information, criticality, information and media literacy, and creating and communicating digital information.
4. Attitudes and perspectives.

Digital competence, thus, emulates an evolution, moving from mere technical skills to a collection of knowledge, skills and attitudes. Bawden's (2008) conceptualisation reflects current ideologies of the construct of digital competence by referring to the convergence of technical skills with ideas and mindsets (Bawden, 2008, Elola & Oskoz, 2017; List et al., 2020). In this study, Bawden's (2008) conceptualisation was used and simplified into defining the construct of digital competence as "an individual's technical skills in operating digital tools, their criticality in choosing appropriate tools in context, and their attitudes and perceptions towards the tools when operating them."

DigCompEdu Framework

The European Commission (2019) expands on Bawden's (2008) conceptualisation in order to produce a digital competence framework specifically designed for educators, called *DigCompEdu*. Educators are seen as role models and facilitators of learning, creating a gateway to increase digital competences from teacher to student. In addition to general competences, teachers must be equipped with teacher-specific competences to effectively integrate technologies and digital media in their own teaching. In order to do so, the *DigCompEdu* framework identifies six distinct areas which act as a core base for 22 digital competences required for effective technological use in learning and teaching. These six areas are categorised into three core domains as shown in Figure 1.

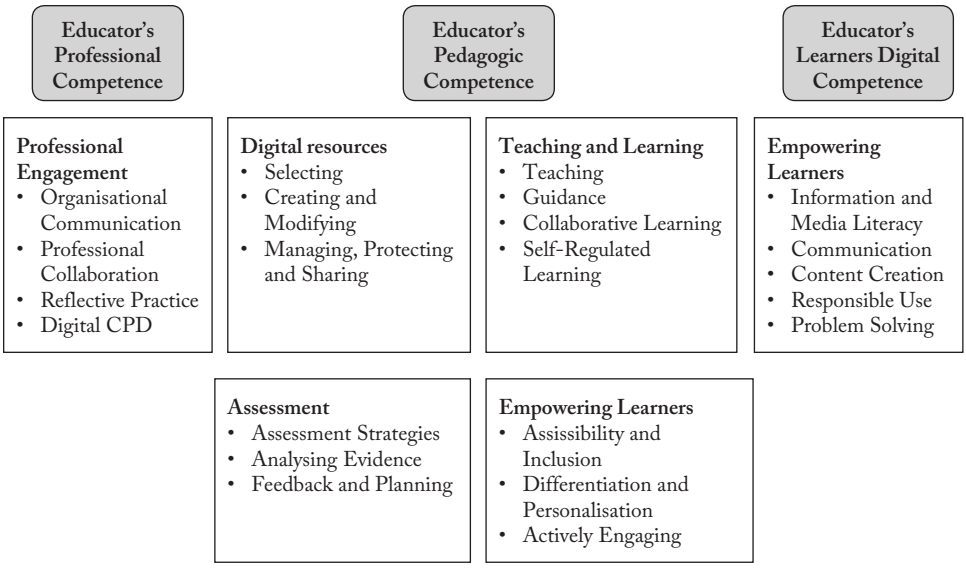

Figure 1. The *DigCompEdu* framework (Adapted from the European Commission, 2019)

In this paper, these three domains from the *DigCompEdu* framework were linked to Bawden's (2008) conceptualisation as follows:

1. Educator's professional competences fall under technical skills and background knowledge in operating digital tools.
2. Educator's pedagogic competences fall under criticality with regards to choosing appropriate tools in context.
3. Learner's competences fall under attitudes and perceptions of the teacher as to how the critical use of digital tools are supported and advocated for in classrooms.

When making a direct comparison with other technological integration frameworks such as the Technological Pedagogical Content Knowledge (TPACK) model, the *DigCompEdu* offers a wider scope moving from collaborative and autonomous engagement with digital tools at a professional level to a pedagogical and facilitatory level (Caena & Redecker, 2019). The multilevel focus on professional use and pedagogical use, and how these link with attitudes and perceptions, attempts to provide an explicit operationalisation onto how the competences can be measured, interpreted and developed. The *DigCompEdu* six-area framework, thus, acts as the major conceptual model underlying the methodology of this study.

Past Studies

However, research published on the assessment tool are skewed towards its conceptual implications rather than empirical studies. This further highlights the need to investigate

the application of the tool and its possibilities. Literature assessing the reliability and validity of the tool suggest the assessment to be sufficiently rigorous in its differentiation between the areas identified in its framework (Cabero-Almenara et al., 2020; Ghomi & Redecker, 2019). The 2020 study measured digital competence scores of 2,262 educators to find that answers provided between areas and final scores showed statistically significant correlations ($p \leq 0.001$). In addition, all correlations were found to be positive, highlighting that when scores in one area increase, other areas are more likely to follow. Ghomi and Redecker (2019) report similar findings of reliability, showing Cronbach's alpha levels ranging from 0.687 to 0.823. Therefore, the findings from the study by Cabero-Almenara et al. (2020) provided evidence that teachers who have prior experience with digital technologies were having statistically significant higher scores than their counterparts, further confirming the validity of the tool. This in turn, signifies the possible impact of the tool and highlights the implications of using the assessment in the context of informing TCPD programmes.

In another study, Finnish experts developed a new model for TCPD named the 2Digi project, designed using the *DigCompEdu* framework as a reference for development (Juurakko-Paavola et al., 2018), with the major aim of increasing integration of digital tools in classrooms. The 2Digi project uses the concept of first testing teachers' personal realities with regards to their digital competences, prior to providing training and resources. The initial assessment stage incorporates an assessment adapted from the *DigCompEdu* framework and acts as a needs analysis to fine-tune resources for teachers with specific competences, thus tailoring recourses and training for the specific needs of teachers (Juurakko-Paavola et al., 2018). Pilot research data on the initiative found that the six areas in the framework led to modifications in the design and planning for teacher training (Raita et al., 2019).

Research Questions

This study aimed to explore the digital competence profiles of Sri Lankan English language teachers, in order to provide a better understanding of the diverse set of digital skills and competences in English as a Second Language (ESL) teachers, to inform policy design, professional development and interventions focusing on increasing integration of digital tools in language classrooms. To do so, the following research question is formulated: To what extent are Sri Lankan English language teachers digitally competent according to the *DigCompEdu* assessment?

This question is further branched into two sections for a more detailed investigation.

a. What is the current digital competence profile of the Sri Lankan English language teachers, as measured through their digital competence scores?

b. What is the relationship in scores between each area in the *DigCompEdu* assessment?

METHODOLOGY

Research Design

The research methodology employed in this study is quantitative in nature and used an online questionnaire adopting the *DigCompEdu* (2017) assessment tool. In order to administer the survey, ethical clearance was received in line with the British Education Research Association (BERA). Quantitative methods are used based on the assumption that data can be obtained in a completely objective manner, solely based on numerical figures void of any researcher interpretations (Boeren, 2018). Given that this study explored the specific digital competence profiles of language teachers by collecting numerical scores distinguishing a specific competency band to each teacher, a quantitative methodology was deemed appropriate to answer the proposed research questions.

Site and Participants

Based on the latest data available, there are a total of 22,110 primary and secondary English language teachers employed within the public-education system (Sri Lanka Ministry of Education, 2020). Due to the exploratory nature of this study, the opportunity sampling technique was employed; the assessment tool was distributed to teachers available at the point of administration. Consequently, the actual sample size of the study was 40.

Research Instrument

The data was collected solely through an online survey adopting the *DigCompEdu* assessment tool. The assessment was divided into six main sections where the teachers were primarily assessed with regards to their professional engagement with digital tools, and digital resources available to them in their language classrooms. Then, teaching and learning was assessed surveying how digital tools were used in classroom practice. This leads to the assessment of how digital tools were used to assess student progress, along with how digital tools were used to empower learners and facilitate students' digital competences. The *DigCompEdu* assessment tool incorporated the six key areas highlighted in its framework with each area having a maximum of five questions. Each question is multiple-choice (five options each) where options are arranged according to increasing level of engagement with digital tools. Once the teachers had selected their answer, a score was allocated depending on their choice. The scoring procedure (see Figure 2) was the same for all questions.

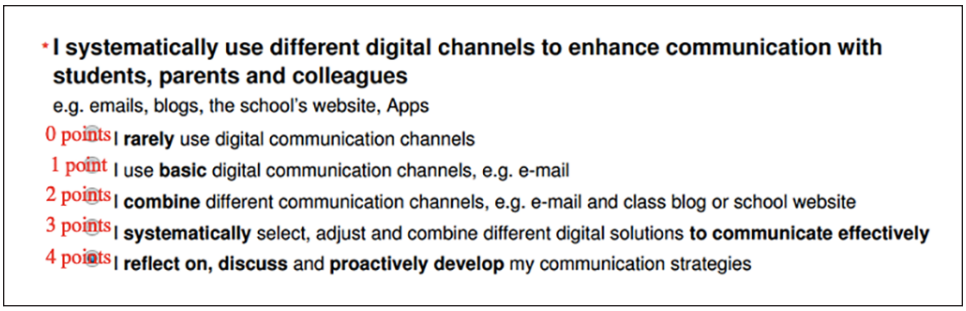

Figure 2. *DigCompEdu* scoring procedure. Sample taken from the *DigCompEdu* self-assessment tool

The learning profile generated in Figure 3 offered a summary of a teacher's overall scores and a breakdown of how each section was scored. The profile also offers a definition of how the scores are intended to be interpreted by the designers of the assessment, thus addressing the research questions in more detail (see Figure 4).

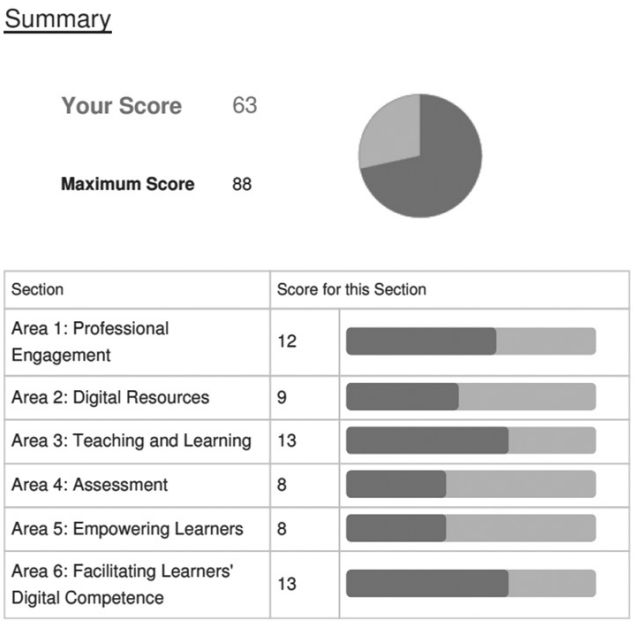

Figure 3. Sample Digital Competence Learning Profile. Taken from the *DigCompEdu* self-assessment tool

If your score is between 66 and 80, you are a Leader (C1)

This means: You have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices. You rely on a broad repertoire of digital strategies from which you know how to choose the most appropriate for any given situation. You continuously reflect on and further develop your practices. Exchanging with peers, you keep updated on new developments and ideas and help other teachers seize the potential of digital technologies for enhancing teaching and learning. If you are ready to experiment a bit more, you'll be able to reach the last stage of competence, as a Pioneer.

Figure 4. Interpretation of Digital Literacy Score. Sample taken from *the DigCompEdu* self-assessment tool

Data Collection and Analysis

Invitations to complete the survey were sent out in two stages through multiple contacts during a two-month period. In stage one, invitations were sent electronically to two public schools in order to inform the schools of the study and its aims, and to request their corporation to participate in the survey. Once these schools provided consent for their English language teachers to participate in the survey, they were sent a link of the adopted *DigCompEdu* assessment to submit their answers. The second stage involved contacting the National Institute of Education in Sri Lanka, in order to access the English language teachers enrolled in the RESC centres and postgraduate programmes. After exchanging initial contact and introductions, this stage continued on as stage one.

RESULTS

Participant Demographics

Table 1 provides a summary of the demographics involved in this study. As can be seen, a majority of the participants were female (77.5%) with 55% of teachers having less than one year of teaching experience. From the sample, 97.5% of teachers are secondary-level English language teachers with 77.5% employed in type 1AB schools which according to the Sri Lankan MOE (2020), are schools administering Advanced Level Science stream classes. Majority (62.5%) of teachers are also based in Colombo, the commercial capital of Sri Lanka. Evidently, 80% of teachers have computer or technology-related certification, suggesting that majority of teachers would have adequate background knowledge of technologies and their application. All participants were from government-funded public schools.

Table 1. Demographics of sample used for this study

Question	Choice	Percentage	Number of participants
Are you…?	Male	22.5	9
	Female	77.5	31
How many years of teaching experience do you have?	Less than 1 year	55	22
	1–5 years	12.5	5
	5–10 years	2.5	1
	10–15 years	15	6
	More than 15 years	15	6
Which stage are you teaching?	Primary	2.5	1
	Secondary	97.5	39
What type of school of you work in?	1AB	77.5	31
	1C	12.5	5
	Type 2	7.5	3
	Type 3	2.5	1
*Which district is your school located in?	Colombo	62.5	25
	Kandy	10	4
	Ampara	5	2
	Gampaha	5	2
	Badulla	5	2
Do you have any computer or information technology (ICT) related certificates?	Yes	80	32
	No	20	8

Distribution of Scores for Each Area

In order to answer the main research question, mean scores were calculated for each area along with the overall scores. The mean scores for each area are comparatively similar except for Area 6 (facilitating learner's digital competence) which shows a significantly higher mean score. Area 4 (assessment) and Area 5 (empowering learners) report comparatively lower mean scores of 4.2 (*SD* = 3.1) and 3.8 (*SD* = 1.6) respectively, with Area 5 having the lowest mean score against all other areas. The overall mean score of the sample is 31.6 (*SD* = 12.3).

Table 2 also displays the minimum and maximum scores and these scores are compared against the mean score for each Area. Although the mean scores for Areas 1–4 range between 4 and 5, minimum scores for each go as low as 0 while maximum scores are as high as 11 or 12, considerably close to the maximum score test-takers can obtain from the *DigCompEdu* assessment (maximum possible scores for Areas 1 and 3 are 16, while Areas 2, 4 and 5 are 12). The lowest mean score obtained by Area 5 (3.8) shows a maximum

score of 10, 2 points below the highest possible score achievable for Area 5. The mean overall score is 31.3, around half of the maximum score achieved by the sample, while the minimum score is 9. The displayed results thus show a considerable variation and distribution in scores for each area among the sample tested (see Figure 5).

Table 2. Distribution of scores for each area

Area	Mean score	Min	Max	*SD*	Coefficient of variation	Highest possible score
Area 1: Professional engagement	5.8	1	11	2.4	0.4	16
Area 2: Digital resources	4.5	0	9	2.3	0.5	12
Area 3: Teaching and learning	5.5	1	12	3.1	0.6	16
Area 4: Assessment	4.2	1	9	1.6	0.4	12
Area 5: Empowering learners	3.8	0	10	2.6	0.7	12
Area 6: Facilitating learner's digital competence	7.4	0	16	4.2	0.6	20
Overall scores	31.3	9	63	12.3	0.4	88

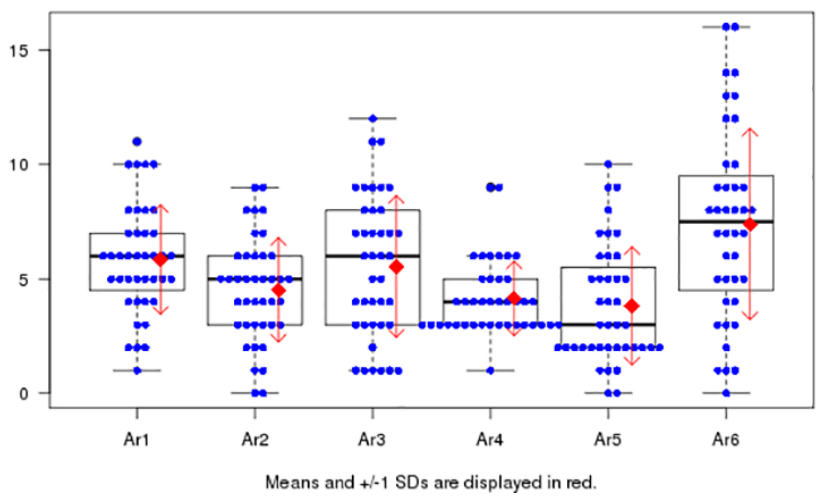

Figure 5. Visual representation of distribution of scores in each area
Note: The blue dots represent each separate data point while the red diamond represents the mean value. The embolden line within the interquartile range (rectangle) is the median point within the data set.

Percentage Distribution of Competency Bands for each Area

In Area 1, 52.5% of the teachers within the sample have been allocated a competency band level of A2, while Area 2 shows similar percentages of teachers receiving a band A1 or A2, with only a 5% difference between the two. There are 55% of the teachers receive

a score at A1 level within Area 5. The majority of teachers are at A1 level, however, this is the only area in which 2.5% of teachers have obtained a C1 level. Within the sample, no teachers have obtained a band score in the C1 or C2 level for any other area. Overall, 40% of the English teachers from the sample are at B1 level, while 32.5% of teachers are at A2 and 20% are at A1 levels. From Table 3, it is evident that majority of the teachers sampled in this paper are between A1 to B1 levels (from newcomer to integrator, respectively).

Table 3. Distribution of competency bands for each area

Areas	Band A1	Band A2	Band B1	Band B2	Band C1	Band C2
Area 1: Professional engagement	10 (25%)	21 (52.5%)	8 (20%)	1 (2.5%)	0	0
Area 2: Digital resources	13 (32.5%)	15 (37.5%)	7 (17.5%)	5 (12.5%)	0	0
Area 3: Teaching and learning	17 (42.5%)	12 (30%)	7 (17.5%)	4 (10%)	0	0
Area 4: Assessment	18 (45%)	14 (35%)	6 (15%)	2 (5%)	0	0
Area 5: Empowering learners	22 (55%)	8 (20%)	6 (15%)	3 (7.5%)	1 (2.5%)	0
Area 6: Facilitating learner's digital competence	15 (37.5%)	11 (27.5%)	9 (22.5%)	5 (12.5%)	0	0
Overall score	8 (20%)	13 (32.5%)	16 (40%)	3 (7.5%)	0	0

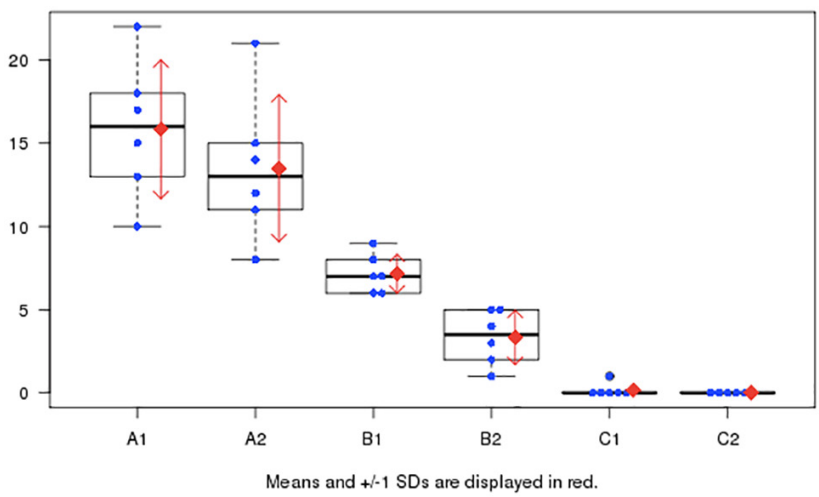

Figure 6. Visual representation of distribution of competency bands for each area
Note. The blue dots represent the overall score for each area, while the red diamond represents the mean value. The embolden line within the interquartile range (rectangle) is the median point within the data set.

Overall Assessment Results compared with Perceived Scores

Before completing the assessment, the teachers were asked in the survey to assign themselves the competency band they perceive they are in. Noticeably in Figure 6, it is evident that the teachers' perceived bands differ from their actual bands however, residing within the same ranges between the A1 and B2 competency bands. Compared to the actual scores, 2.5% of teachers perceived their digital competence to be at C1 level. Yet, this value may be negligible when compared to other levels, as it is less than 5% of the entire sample. Although a small number perceived themselves to be at C1 level, similar to the actual scores, none of the sample perceived themselves to be at the highest digital competency band. Rather interestingly, the majority of these English teachers (32.5%) perceived themselves to be at A1 level: the lowest competency band possible within the *DigCompEdu* assessment. In reality, only 20% of the sample was within the A1 competency band (12.5% lower than perceived).

Table 4 represents the data with regards to over-estimation (perceived band higher than actual band), under-estimation (perceived band lower than actual band) and similar values where perceived bands are equal to actual bands. From the assessed sample, 15 teachers (37.5%) over-estimated their digital competence bands while 15 (37.5%) under-estimated their bands. Ten teachers (25%) accurately indicated their digital competence band. Overall, however, 75% of the sample showed a discrepancy between their perceived digital competence level and their actual digital competence level (see Figure 7).

Table 4. Representation of over-estimative bands and under-estimative bands

Teacher	Perceived band (PB)	Actual band (AB)	(PB–AB)	Label
1	B2	B1	1	Over-estimation
2	A2	A2	0	Same
3	B1	A2	1	Over-estimation
4	A1	A2	–1	Under-estimation
5	B2	A2	2	Over-estimation
6	B2	B1	1	Over-estimation
7	A2	A1	1	Over-estimation
8	A1	A1	0	Same
9	A2	A2	0	Same
10	A1	A2	–1	Under-estimation
11	A2	B1	–1	Under-estimation
12	B1	A2	1	Over-estimation
13	B1	A2	1	Over-estimation
14	C1	B1	2	Over-estimation

(*Continued on next page*)

Table 4. (*Continued*)

Teacher	Perceived band (PB)	Actual band (AB)	(PB–AB)	Label
15	A1	B1	–2	Under-estimation
16	A1	A1	0	Same
17	A1	B2	–3	Under-estimation
18	B1	A2	1	Over-estimation
19	A1	B1	–2	Under-estimation
20	A2	B1	–1	Under-estimation
21	A1	B2	–3	Under-estimation
22	A1	B1	–2	Under-estimation
23	A2	B1	–1	Under-estimation
24	A2	B1	–1	Under-estimation
25	A1	A1	0	Same
26	A1	B1	–2	Under-estimation
27	A1	A1	0	Same
28	A2	A2	0	Same
29	A1	B1	–2	Under-estimation
30	B1	A1	2	Over-estimation
31	A2	A1	1	Over-estimation
32	A2	B1	–1	Under-estimation
33	B1	A2	1	Over-estimation
34	B1	A2	1	Over-estimation
35	B1	B1	0	Same
36	B2	B1	1	Over-estimation
37	B1	B1	0	Same
38	B1	B2	–1	Under-estimation
39	B1	A1	2	Over-estimation
40	A2	A2	0	Same

Note. In order to calculate an over-estimation or an under-estimation, each band label (A1 to C2) was given a score (A1 = 1, A2 = 2, B1 = 3, B2 = 4, C1 = 5, C2 = 6).

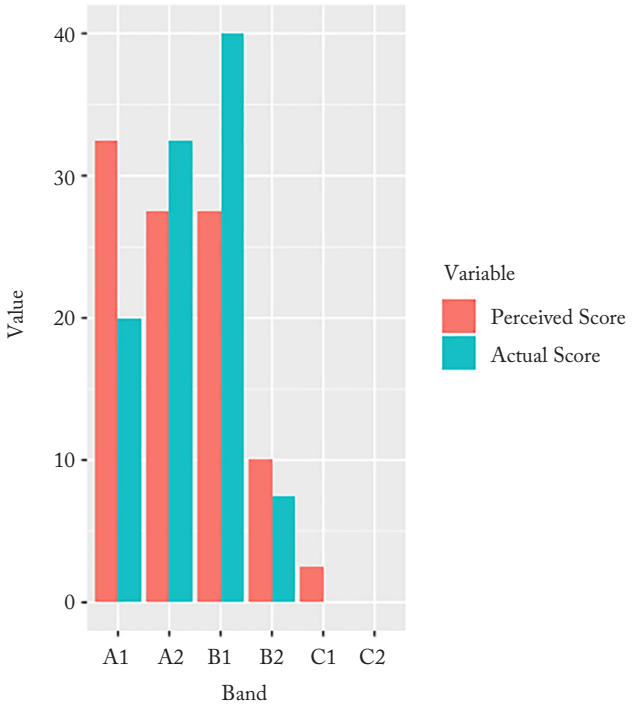

Figure 7. Percentage of perceived scores vs. actual scores

Relationship between Each Area

The Pearson correlation coefficient statistical test was used to identify whether there is any relationship between scores in each area. This was generated in order to answer Part (b) of the research question: What is the relationship in scores between each area in the *DigCompEdu* assessment? The correlation coefficient functions under the assumption that scores in each area may be related to one another and this relationship is between 0 and 1, where 0 indicates no correlation between items and 1 signifies a perfect positive correlation. In Table 5, in accordance with Taylor's (1990) interpretations, all correlation coefficients with a value > 0.4 was assumed to have a medium relationship, while a value > 0.6 is interpreted as having a strong relationship. Therefore, any value that was > 0.4 was embolden as having a relationship. From Table 6 it is noticeable that almost all Areas have a relationship to one another except scores in Area 5 with Areas 2 and 3 (smaller relationship, $r = 0.31$, $r = 0.37$, respectively). However, scores within Areas 4 and 5 have a strong relationship with Areas 5 and 6, respectively ($r > 0.6$). A scatterplot matrix provided in Figure 8 displays the normal distribution curves for the scores in each area and indicates which areas fall under a normal distribution (Areas 1, 2 and 6) and which display a skewed distribution curve (Areas 3, 4 and 5).

Table 5. Pearson correlation coefficient statistical table for scores from Area 1 to Area 5

Variable	*M*	*SD*	1	2	3	4	5
Area 1	5.85	2.39					
Area 2	4.53	2.28	**0.43**** [0.14, 0.66]				
Area 3	5.55	3.10	**0.46**** [0.18, 0.68]	**0.45**** [0.16, 0.67]			
Area 4	4.15	1.63	**0.53**** [0.26, 0.72]	**0.40*** [0.10, 0.63]	**0.60**** [0.35, 0.77]		
Area 5	3.83	2.58	**0.45**** [0.16, 0.67]	0.31 [-0.00, 0.57]	**0.37*** [0.06, 0.61]	**0.70**** [0.49, 0.83]	
Area 6	7.40	4.18	**0.49**** [0.21, 0.70]	0.37* [0.06, 0.61]	**0.59**** [0.34, 0.76]	**0.62**** [0.38, 0.78]	**0.53**** [0.26, 0.72]

Note: *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$

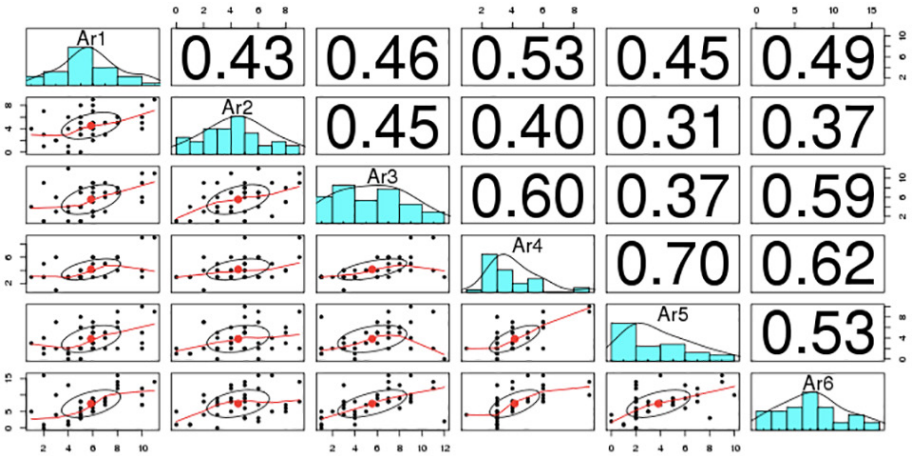

Figure 8. Scatterplot matrices representing scores for each area

DISCUSSION

This study assesses digital competence in Sri Lankan English language teachers using the *DigCompEdu* assessment tool and finds that majority of teachers (40%) are at the B1 integrator level. 92.5% of the sample are within the A1 to B1 range between newcomer and integrator labels and 75% displayed a discrepancy between perceived and actual competency scores. When investigating the relationship between bands, almost all areas have a medium to strong relationship ($r > 0.4$).

The findings for research question (a) on the teachers' profiles of digital competence showed that the majority of competence scores are within A1–B1 levels in all areas, with 52.5% of teachers at A2 level in Area 1 of the digital competence assessment. According to the framework, A2 level is labelled as the 'explorer' as educators at this level are expected to be aware of the capabilities of digital tools and software, and are open to explore such tools to enhance their own pedagogies and learning practices. However, as Area 1 is more involved with professional engagement, an A2 level indicates that a majority of the teachers are able to be appreciate digital capabilities, although they are not yet able to (but are willing to) explore how digital tools can be utilised to facilitate interactions between their co-workers, pupils, parents and other professional learning communities. This also indicates that majority of the teachers have not reached the B1 level where they are able to integrate digital tools to various contexts. Besides, it is important to note when administering this assessment that specific competence scores/bands are not a permanent label, rather a snapshot of where teacher competences reside at the point of assessment. With specific interventions catered towards a competency band 'can-do', research indicates that teachers are expected to show a slow progression from one competence level to the next (Juurakko-Paavola et al., 2018).

Area 2 shows a similar trend whereby, majority of teachers are within the A2 competency band (37.5%) however, 32.5% of teachers are also within the A1 range (5% difference). By having an A1–A2 band score, it is evident that teachers are still within newcomer and explorer levels. An A1 level indicates that teachers are still not aware of the digital resources that may be available to them and how to link resources with their classroom objectives to meaningfully enhance classroom pedagogies. An A2 level indicates a slight increase in awareness and willingness to explore the available resources in their teaching. Similar to Area 1 however, less than 20% of teachers receive higher band scores in this Area. Areas 3, 4, 5 and 6 all have majority of the sample receiving a band score of A1 (42.5%, 45%, 55% and 37.5%, respectively). A1 is the lowest band score within the *DigCompEdu* assessment and is labelled as the 'newcomer'. An indicative A1 band score thus concludes that beyond using digital tools for professional engagement and classroom resources, majority of the sample are still newcomers when integrating the tools in their learning practices.

Majority of the sample (40%) however, received an overall band score of B1 level. This indicates that overall, teachers are able to integrate digital tools to a variety of contexts for a variety of purposes. This also indicates that teachers may be able to strategise their use of digital tools to facilitate specific objectives and expected learning outcomes. Nonetheless, 0% of teachers are at C1 or C2 levels. This signifies that although majority of teachers may be integrating digital tools in their language teaching, they are not employing metacognitive strategies to use tools in accordance to specific contexts. It also indicates that teachers may not be moving into reflective use of digital tools and may not be aware of/able to exchange drawbacks, challenges and new strategies or developments, to facilitate successful classroom practice. These findings consequently inform TCPD with regards to the diversity in competence scores in a Sri Lankan English teacher sample, as well as how 'can-do's' can be operationalised to inform such initiatives. The findings also link to the

Finnish 2Digi project (Juurakko-Paavola et al., 2018) in terms of the potential of prior assessment for teacher training initiatives. A more varied, individualised and personalised TCPD can therefore be recommended in order to appropriately and effectively address this variation.

When comparing the overall digital competence scores alongside the English teachers' perceived scores, it is evident that even though overall, majority of teachers are at a B1 level, majority of perceived scores are at A1 level. This can indicate that either majority of the sample perceived their level of digital competence to be at the lowest possible level in the assessment or that the sample saw the labels alongside the band options and identified more with the 'newcomer' label compared to the rest at higher levels. Nevertheless, this shows that teachers may not be confident in their own abilities to use digital tools in their classrooms which could be due to various causes such as lack of resources, support or training aligning with previous research (Hutchison & Reinking, 2010; Juurakko-Paavola et al., 2018; Røkenes & Krumsvik, 2016). In addition, 75% of the sample showed a discrepancy between perceived score and actual score, displaying either an over or under-estimation (37.5% each) indicative that training with no prior assessment will not provide support specifically aligned with teacher needs and competences.

The *DigCompEdu* framework is designed with regards to the can-do's of teachers and how they can move from one competency band to the next. Taking this paper's results as an example, if 40% of language teachers participating in a digital competency TCPD programme are receiving a programme catered towards the A2 level, they are thus not receiving adequate support or resources to master their own awareness and existing skills, nor to progress into expert or more reflective and metacognitive levels. Similarly, teachers at A1 level are further disadvantaged as the programme may be too challenging to adequately utilise the taught material in their own practice.

The findings for research question (b) on the relationship between the areas, indicated that neither of the areas act in isolation and in order to receive a high band score (C1 or C2 levels), teachers are required to master each area of the framework, aligning with Cabero-Almenara et al.'s (2020) findings. This not only shows a clear relationship between each area but links back to the paper's own working definition of digital competence. The paper defines digital competence as an individual's technical skills in operating digital tools, their criticality in choosing appropriate tools in context, and their attitudes and perceptions towards the tools when operating them. From the three key factors highlighted in this definition, it is evident that high levels of digital competence cannot function with a lack of either of the three key factors. Rather, all three elements are associated and intertwined with one another and do not act in isolation.

In general, the European Commission's (2020) *DigCompEdu* model was adopted as the major conceptual framework which functioned as the basis for this entire study. In order to measure the digital competence profiles of Sri Lankan English language teachers, this paper attempted to first define digital competence as a means of operationalising it, thus linking Bawden's (2008) definition to the *DigCompEdu* framework. This in turn, provided

a working definition for digital competence as incorporating technical skills, criticality, and attitudes and motivation when using digital tools. As this was the definition used, the *DigCompEdu* assessment was considered an appropriate tool for measurement as it assesses all three key elements of the paper's working definition. It is important to note however, that this paper may be limited to the views of Bawden's (2008) definition as well as the *DigCompEdu* framework itself. Regarding this, it is important to note that there is no universally agreed upon definition for digital competence. Consequently, there are many schools of thought which provide different definitions for the concept, depending on their own major principles. When taking these principles into consideration, it is evident that although the research tool used was appropriate in the context of this paper and research question, it may not be suitable to measure digital competence with regards to other schools of thought.

On a whole, the findings from this paper provide significant implications for future study of digital competence among teachers. This paper alongside the *DigCompEdu* framework provide a snapshot into the possible attitudes and competences of the assessed sample of teachers at a given period of time. However, due to the small sample, it may not have been possible to receive a clear visualisation of digital competence at a national level. Despite its limitations, this paper provides data on the pedagogical realities in terms of use of digital tools. In order to gather clear and in-depth data on attitudes, perceptions and needs of teachers to support the numerical findings, a rich collection of data at a wider scope would be required and beneficial to widen the pool of knowledge this paper contributes to.

CONCLUSION

The study adds to the current growing literature on digital competence, specifically in language teaching contexts and aims to inform policy and national teacher-training initiatives in Sri Lanka, using the *DigCompEdu* six-area framework as a guide. The present findings show that majority of teachers fall under B1 level of the *DigCompEdu* assessment. The B1 level indicates that teachers are able to experiment with digital tools appropriately according to a range of contexts. This also indicates however, that teachers at this level are unable to select specific digital tools for specific purposes while reflecting on the strengths and limitations of the tool in context.

These findings highlight the possibility of using the *DigCompEdu* as a measure of digital competence to inform TCPD. In establishing a tool to measure the construct, it is crucial to recognise the composite nature of digital competence, while addressing the ambiguities in definitions used. Despite these challenges, measuring digital competence takes a crucial step towards potential changes in TCPD design and with larger scale studies, may highlight the personal realities of Sri Lankan English language teachers based on the skills and competences they possess. The conceptualisation and operationalisation of digital competence, thus, offers an awareness of the pedagogical potential for tailor-made support, driven by a teacher's own competence.

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