Readiness of Inclusive Elementary School Teachers to Implement Universal Design for Learning (UDL): A Needs Analysis

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Abstract. UDL in inclusive elementary schools encounters difficulties about teachers' knowledge and background, and access to professional support. The purpose of this study is to examine UDL-related knowledge levels, familiarity, perceived advantages, training needs and instructional constraints among 50 inclusive elementary school teachers using survey method. Findings, teachers' attitudes toward UDL are positive in that the majority believe or strongly believe that UDL will promote academic engagement and instructional utility. One key finding is the high level of interest in UDL training, as 95% of teachers indicate a need for specialized training over and above their current knowledge to understand and implement UDL correctly. In addition, the teachers reported a number of key resources required to facilitate UDL implementation such as: training (70%), instructional modules (64%), technological tools (58%) and expert support teams (52%). The main barriers faced by teachers when teaching SEN children include lack of specialist support (34%), resources to support learning (28%) and technology (20%). Findings call for an immediate intervention on a structured UDL training model to enhance teachers' competences in inclusive instructional practice. The study also underscores the significance of increasing resources and enabling professional collaboration, to establish more supportive and justifiable learning environment for children with disabilities in inclusive elementary schools.

Keywords: Universal Design for Learning, inclusive education, children with special needs.

Abstrak. Penerapan *Universal Design for Learning* (UDL) di sekolah dasar inklusif masih menghadapi berbagai kendala, terutama terkait pengetahuan dan latar belakang guru serta akses terhadap dukungan profesional. Penelitian ini bertujuan untuk mengkaji tingkat pengetahuan terkait UDL, tingkat familiaritas, persepsi manfaat, kebutuhan pelatihan, dan kendala pembelajaran di kalangan 50 guru sekolah dasar inklusif dengan menggunakan metode survei. Hasil penelitian menunjukkan bahwa sikap guru terhadap UDL cenderung positif, di mana sebagian besar guru percaya atau sangat percaya bahwa UDL dapat meningkatkan keterlibatan akademik dan efektivitas pembelajaran. Salah satu temuan utama adalah tingginya minat terhadap pelatihan UDL, dengan 95% guru menyatakan kebutuhan akan pelatihan khusus di luar pengetahuan yang mereka miliki saat ini agar dapat memahami dan menerapkan UDL secara tepat. Selain itu, guru melaporkan sejumlah sumber daya penting yang diperlukan untuk mendukung implementasi UDL, antara lain pelatihan (70%), modul pembelajaran (64%), perangkat teknologi (58%), dan tim pendukung ahli (52%). Hambatan utama yang dihadapi guru dalam mengajar anak berkebutuhan khusus meliputi kurangnya dukungan tenaga spesialis (34%), keterbatasan sumber daya pembelajaran (28%), dan keterbatasan teknologi (20%). Temuan ini menegaskan perlunya intervensi segera berupa model pelatihan UDL yang terstruktur untuk meningkatkan kompetensi guru dalam praktik pembelajaran inklusif. Penelitian ini juga menekankan pentingnya peningkatan ketersediaan sumber daya dan penguatan kolaborasi profesional guna mewujudkan lingkungan belajar yang lebih suportif dan adil bagi anak penyandang disabilitas di sekolah dasar inklusif.

Kata kunci: Universal Design for Learning, pendidikan inklusif, anak berkebutuhan khusus.

1. INTRODUCTION

Inclusive education has been a world wide focus that all child must get the equitable opportunities to have quality learning including children with special needs (CWSN). According to UNESCO (2020), inclusive education involves ensuring that schools dismantle barriers to learning and set up environments where all learners are able to engage actively. In its inclusive primary schools, Indonesia

places regular class room teachers in the central position of working with all students, both typical students and SWDs, making their pedagogical preparedness a decisive factor to successful inclusion.

The exigency of this matter is highlighted by survey responses from 50 teachers in inclusive elementary classrooms. Fifty percent of teachers indicated they had never heard of UDL, and 95% reported the need for specific training to utilize and apply the principles of this design. Limited expert support (34%), lack of resources (28%), and technology barriers (20%) were cited by teachers as obstacles as well. This indicates that, despite the law to inclusivize education, teachers do not have appropriate pedagogical skills and structural support needed for inclusive education.

This is consistent with the literature worldwide indicating that teachers commonly move into inclusive contexts without any (or enough) understanding or confidence about how to support inclusion. For instance, Firat (2021) reported that many teachers do not feel adequately prepared to address instructional differentiation and classroom management for diverse learners. The greatest predictors for inclusive teaching competencies are professional competencies, while openness to experience and work position have minor significance (for example, Skočić Mihić, S., Tatalović Vorkapić, S., & Čepić, R., 2022). The failure to take the time to properly prepare will undermine any effort to actually do things in practice like teach inclusively, UDL style.

Universal Design for Learning (UDL) offers three primary principles—multiple means of representation, action/expression, and engagement—that seek to ensure learning is attainable for all students(CAST 2018). It is well-known theory in the realm of inclusive education, and a fundamental framework that contents has to develop against learner variability rather than address these on need-basis. Yet, the findings suggest that teacher knowledge and applicability of UDL is limited in spite of more widespread views expressed by teachers themselves, which aligns with European Agency for Development in Special Needs Education (2003) Teachers need a repertoire of skills, expertise, knowledge, pedagogical approaches, adequate teaching methods and materials and time if they are to address diversity effectively within their classrooms. What teachers do in classrooms depends on their training, experiences, beliefs and attitudes. Handling or dealing with differences or diversity in the classroom forms one of the biggest challenges within European classrooms.

Teachers' conceptions of UDL are similarly jilted. While the majority of teachers in the survey either agreed or strongly agreed UDL is useful, a sizable number were neutral or undecided contributing to knowledge construction that may not be used. This mirrors Sharma et al. (2018) to claim that teachers' perceived efficacy in inclusive education is formed under the strong influence of their training, experience and institutional support.

The Inclusive Pedagogy Model is an important theoretical scaffolding for this study. For example, inclusive pedagogy demands that teachers hold the belief that all students can learn and teaching practices are adaptable enough to cater for student heterogeneity (Florian, 2017). However, according to surveys, many teachers confront structural obstacles, such as inadequate expert support and access to technology or materials that prevent them from developing fully inclusive practices. Additionally, as Waitoller and Artiles' (2016) sociocultural framing of teacher learning stresses, teacher preparedness is not simply a function of individual competency; it emerges from systemic support and interworking rather. The survey results echo this perspective as teachers reported that training designs, assistive technologies and support teams of experts are key resources for the application of UDL.

Collectively it can be realized that these problems constitute a significant research problem. Despite the efforts of international studies that have examined teachers' UDL readiness, relatively few studies provided Indonesian empirical evidence on teachers' knowledge status, familiarity, perceived added value to teaching and learning activities, training necessity and barriers in their perceptive. Literature stresses general attitudes toward inclusion, but does require practical pedagogical preparation and resource demands regarding UDL implementation.

Consequently, the purpose of this study is to fill these gaps by exploring preparedness of Inclusive Elementary School Teachers to implement UDL. It explores teachers' knowledge base, perceived benefits as well as training needs and instructional challenges to afford a more comprehensive picture of their preparedness for UDL-informed instruction. It is anticipated that this study will provide evidence for policy making and inform teacher training, with a focus on facilitating inclusive practices in Indonesia.

2. METHOD

The authors employed a quantitative descriptive survey design to investigate readiness of teachers towards practicing UDL in inclusive elementary classrooms. Descriptive survey was chosen because it is a systematic method that allows patterns, levels of awareness and perceptions, and training needs to be examined together in one group of teachers without manipulating variables (Creswell & Creswell, 2018) therefore enabling the research to reflect the actual state of affairs accurately. The participants were 50 elementary school teachers covering in all teaching backgrounds, volunteered to participate for this study. This was the sample, and these teachers were selected from among those enaged in education in mainstream elementary schools. They were not selected by random sampling but purposive sampling which was based on special criteria, that the respondents must have been with some teaching experiences and had dealing directly in inclusive-level children who are school-aged with disabilities. This approach was suitable per the nature of the theme that needed response from teachers who fulfill certain pedagogical and contextual conditions (Etikan, 2016). The sample demographics were also consistent with the descriptive statistics, in which teachers reported some exposure to students with disabilities and different levels of prior UDL knowledge.

In a telephone interview, the author of this study engaged each participant in dialogue through a semi-structured questionnaire designed to capture multiple constructs such as knowledge and awareness of UDL, perceived value in leveraging UDL principles, instructional training needs, and instructional barriers. The questionnaire had a combination of nominal scale items based on which were simple categorical questions and likert scale base for attitudinal and perceptual. For establishing the measurement accuracy, the instrument was reviewed for content validity by inclusive education and educational measurement experts to check item clarity, relevance and its consistence with UDL constructs (CAST, 2018; Firat (2021)). Face Validity Face validity for product was established in the adaptation process in order to check the correspondance between the items and theoretical UDL contents analysed. The reliability was determined by using a Cronbach's Alpha in SPSS version 30, with the reliabilities (coefficient values of at least 0.70) considered acceptable for internal consistency between Likert-based items which are similar to th standards for education research (Taber, 2018).

Teachers filled out the questionnaire - digitally as well as on paper. Respect for ethics The respondents were informed about confidentiality, voluntary participation and aims of the study to ensure the ethic was intact. Questionnaires were coded and analyzed once collected. The data was analyzed by SPSS software version 30 which allowed for descriptive statistics, including frequencies, percentages and means and standard deviations. These descriptive results were used to interpret the level of teachers' UDL awareness, perceived utility toward UDL, and readiness for learning. Reliability checks were also conducted using SPSS to see consistency of multi-item scales for example perceived benefits, training needs and barriers to implementation. SPSS visualization tools, including bar charts and pie chiarts were employed in order to portray that the teachers distributed themselves within categories of UDL knowledge, levels of familiarity with UDL practice and their training needs. Through this analysis, the present examination contributed to deepening our understanding of teacher readiness and identifying three key areas of UDL-related expertise, resources, and environmental support that informed the recommendations in this paper.

3. RESULTS AND DISCUSSION

3.1. Teachers' Frequency of Class of Students with Special Needs

The findings also show that teachers' in teaching special children differ significantly. A majority of teachers reported teaching rarely (32%), often (28%), always (20%) and sometimes (6%) these students, but 14% indicated that they never teach SWDs. This spread indicates that while most of the teachers

have some exposure to CWSN, their contact varies significantly, pointing towards variance in operational preparedness for inclusive teaching.

3.2. Knowledge of UDL

A major finding was that 50% of participants never knew there was a concept called UDL and a similar proportion already knew about it to an extent. This even split in distribution is a significant under-representation of UDL despite the fact that UDL plays an important role in the establishment and operation for accessible learning environments within classrooms that are inclusive.

3.3. Knowledge of UDL Principles

For those teachers who knew about UDL, subject experience and knowledge levels were variable. The other half of teachers were characterized as "Not Applicable," for lack of exposure. Among the remainder, 14 percent said they were "very familiar," 16 percent were "less familiar," 8 percent were "familiar," 6 percent were "quite familiar" and another 6 percent responded, "not familiar at all." These results draw attention to the fact that, even in teachers who are familiar with UDL, operational experience of and proficiency with it are not well developed.

3.4. UDL's Perceived Benefits

Despite limited information, attitudes towards UDL were generally positive. The majority of teachers agreed (46%) or strongly agreed (38%) that UDL is helpful. A minority reported negative attitudes, with only 4% disagreeing and 2% strongly disagreeing. This indicates that teachers are open and willing in general to use UDL when it is adequately trained.

3.5. Training Needs of Teachers and Instructional Problems

An impressive 95% of teachers indicated a need for formal UDL training, indicating a dramatic demand for professional learning. Teachers thought that there were some indispensable resources: preparation (70%), guide modules (64), technology tools (58) and expert support team members (52). Teachers also felt that there were challenges in inclusive practice including: Difficulty/virtually no access to expert support (34%), Not having enough resources for teachers to help them learn more about how they could be delivering all of their lessons inclusively (28%), Few/No technology was available to them [to] support all learners in a lesson effectively or individually (20%) The range and complexity of pupils' needs (18%).

Low Knowledge and Use as an Indicator of E-AA A low level of E-AA knowledge, recognition, and familiarity is considered to be a result at minimum in the earliest stage of UDL adoption. Regarding the fact that half of teachers were not previously aware of UDL, this is consistent to previous international surveys on UDL in teacher education since UDL still seems to be a novelty in professional development settings for all (Firat, 2021). Teachers' limited exposure indicated for UDL and thus the tool not being fully embedded in teaching education and on school based support. This dearth of exposure is a critical obstacle, as UDL demands intentional curriculum design and cannot be deployed with fidelity without the knowledge base (CAST, 2018).

In essence, this is the knowledge gap that perhaps may impede our teachers' ability to put into place multiple means of engagement, representation, and expression--the foundational concepts for addressing learning variability. European Agency for Development in Special Needs Education (2003), positive attitudes are not enough, teachers also need adequate methods, materials, time, knowledge and skills.

There is No Correlation between an Individual's Experience at Guiding and Support for Children with Special Needs to being Inclusive Competence. Most teachers had in fact taught CWSN to some extent but the range was large. Related research further indicates that experience alone does not translate into competence, and structured training and reflective practice are required to develop effective inclusive teaching capacity (Florian, 2017). The survey findings lend support to this contention: even those teachers who have sufficient exposure to CWSN still had ambiguous understanding about UDL and their competence in employing inclusive teaching strategies. This result is consistent with that of Skočić, Tatalović & Čepić (2022) enhancing the initial and continuing training and support of teachers as the key strategies for the realization of an inclusive and right-based education system.

Teachers Hold Positive Views on UDL Despite Limited Mastery. The study has also detected some optimistic impacts of the education for teachers, such as a significant proportion holds positive attitudes toward UDL. Such a positive attitude is important since teachers' attitudes are good predictors of their readiness to take on new pedagogical methods (De Boer & Pijl, 2016). Teachers' readiness for UDL Even in the absence of rigorous understanding, teachers are open to UDL with high likelihood to adopt it when given proper training.

This is consistent with the results of Sharma et al. (2018) who claim that teachers' self-efficacy promotes when they believe in the purpose and effectiveness of inclusive strategies. The positive attitudes of teachers in this study can be seen as a form for openness early on.

Requisite Training, Resources, and Expert Assistance. The overwhelming demand for instruction (95%) emphasizes a systemic call for UDL training professional development programs. The latter is corroborated by teachers' identified need of guide modules, technology tools and expert assistance - measures that fall in line with global UDL adoption recommendations (CAST. Teachers' report of barriers like lack of expert support (34%) and resources (28%) are consistent with what can be found in international literature which often cites structural and logistical shortcomings as central challenges to inclusive education (Waitoller &, 2016). These limitations must be addressed if UDL is to move beyond theory and become an approach that can be implemented in actual classroom settings.

Implications for Policy and Teacher PD. The findings have straightforward implications for teacher training and school policy. UDL should be part of teacher preparation programs (pre-service and in-service). Second, inclusive schools need to take an all-school approach to UDL by offering technology tools like accessible materials and support systems of professionals. Third, educators and administrators must be certain that special professional development is available for mastery of UDL in application to daily instruction. And if these criteria are met then UDL has the potential to revolutionise teaching and have a tremendous impact on the learning engagement and achievements of children with special needs.

This study has its limitations which are important to consider when interpreting its results. First, the study adopted a descriptive survey design which cannot measure actual classroom practice of UDL but teachers' perceptions and self-reported knowledge as well. Accordingly, this study cannot access how teachers actually translate their perceptions into behaviours or judge the quality of inclusive pedagogy being utilised in real classrooms. Next, purposive sampling was applied in this study and it might not reflect the general population. This sample of 50 inclusive elementary school teachers can be seen as significant but likely does not reflect the population of teachers across various geographies, school types, or experiences. A biger and more diverse sample is needed in order to make the results more applicable on a nationswide level.

4. CONCLUSION

The purpose of this study was to investigate elementary school inclusive teachers' UDL implementation readiness which includes their knowledge, familiarity, usefulness, training needs and barriers related to instructional methods. Survey results suggest that there is an onset of UDL implementation among teachers. And while many regularly instruct students with special needs, fifty percent of teachers have never heard of UDL and only a narrow majority know anything about it at all. This suggests that the basic knowledge of UDL is underdeveloped among inclusive school teachers.

Given their lack of knowledge, the researchers found a strong positive perception toward UDL with majority of teachers agreeing or strongly agreeing that UDL is useful for accessibility and engagement. This shows that teachers are receptive to UDL given adequate support and resources. Their candor also provides a golden opportunity for schools and policymakers to shore up inclusive instructional practices.

One of the clear findings in this study is the tremendous need for capacity development. - 95% of teachers indicated that they required formal training on how to implement UDL, reflecting a systemic professional development gap. The teachers also mentioned that guide modules, technology tools and expert support teams are needed for UDL implementation. In addition, significant instructional obstacles such as insufficient expert guidance, lack of resources and the use of technology show that successful UDL implementation depends not only on teacher preparation but also institutional preparedness and investment.

Finally, it can be concluded that the integration of primary teachers in inclusive schools is characterized by a high degree of motivation but low competence regarding the implementation of UDL and structural factors. In order for UDL to be coterminous with inclusion in the classroom, systemic training initiatives and resource support as well as collaborative supports should be considered. Such areas of focus will empower teachers to structure flexible and inclusive learning spaces that are driven more by children's needs who have special educational needs.

This research adds to the knowledge about teachers's readiness in the context of Indonesian inclusive education, and further highlights systemic improvement required for UDL-based professional development. Subsequent studies can expand the current EF training using classroom UDL application, observe the long-term effect of training program implementation, and develop a local model of UDL that is fit to educational setting in Indonesia.

5. ACKNOWLEDGEMENT

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