

Differentiated Instruction: Definition and Challenging Factors Perceived by Teachers

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Abstract—Differentiated Instruction (DI) is a teaching strategy teachers adopt to attend to student diversity in inclusive classrooms. The aim of this paper is to explore teachers' definition of DI while identifying the challenges experienced in implementing DI strategies. Data for the study were collected from both mainstream teachers and Special Education Needs (SEN) teachers selected from 30 Maldivian schools in which inclusive education is practiced. A total of 368 mainstream teachers and 32 SEN teachers were surveyed with an open-ended questionnaire, and a semi-structured interview was conducted for 8 teachers purposively selected from survey participants. To analyse the data of both the survey and interviews, the open coding strategy [1] was used. Findings revealed that definition of DI can be explained by associating three major facets: (1) use of different strategies (2) addressing student diversity, and (3) advancement of student learning. Six major categories pertaining to challenges were also identified: (1) time, (2) resources, (3) knowledge, (4) class size, (5) support, and (6) workload. These findings are discussed in depth, and implications for practice are suggested.

Keywords—Challenges; Definition; Differentiated Instruction; Inclusive Education; Special Education Needs

I. INTRODUCTION

Given the expansion of student diversity in today's inclusive classrooms, the use of effective instructional strategies is found more valued than ever before. Teachers' attempts of implementing useful strategies are often hindered due to the variety of student characteristics such as, students' varying interests, readiness levels, learning abilities, attitudes, and language development [2][3][4].

Differentiated Instruction (DI) is an effective strategy which many experts recommend for teachers. It is student-aware teaching which recognises and teaches according to learner differences [5][6]. In this study, DI is defined as an approach that provides students with opportunities for learning while embracing individual differences and needs.

In spite of its usefulness, implementation of DI is often found to be not easy and practical in most cases [7][8][9][10][11][4]. It is because, although DI practices seem promising, due to its indistinctness of the concept, under which conditions and in which form differentiation is effective for all ability levels stays unclear [12]. The outcome thus is, infrequent and inconsistent practices in many educational contexts [13][9][14].

This study is based in the context of Maldives, a country that concentrates high importance to improve and promote inclusive education. According to the New Curriculum Framework (NCF) of Maldives, in relation to the principle of inclusivity, catering to individual difference is one of the five pedagogical dimensions of the framework [15]. With regard to the close association between the focus of the NCF and the concept of DI, it is pivotal to analyse teachers' conceptualisation and the conditions in which the concept is possible to implement. Studying and analysing the clarity of definitions related to important instructional strategies such DI will facilitate researchers and practitioners new ways of implementing those complex strategies. Existing literature reveals a dearth of published empirical studies on how teachers define and understand DI, hence due to the above reasons, further studies on the area is warranted.

The purpose of this study is to investigate how DI is conceptually defined by teachers, and to identify the barriers that impede its successful implementation. Subsequent to this purpose, the current study is guided by two research questions.

(1) How is differentiated instruction conceptually defined by teachers?

(2) What are the challenges teachers experience in implementing differentiated instruction in inclusive classrooms?

II. LITERATURE REVIEW

A. *The Conceptual Definition of DI*

Conceptual definitions are useful in understanding how things relate to and work in relation to other things. To represent abstract concepts with descriptive terms like DI, the definitions must be carefully designed and understood rather than using just common sense that leads to imprecise descriptions [16]. Therefore, in order to implement differentiation into professional practice, it is important for teachers to have a thorough understanding of the concept with its specific strategies, because without such a knowledge base, differentiation can be impossible to implement effectively [17]. It is because DI is not a single arena, but a combination of both conceptual orientation and practical application [18].

A review of literature reveals the absence of a clear definition of DI throughout the history. Over the years there has been an evolution of the definition of differentiation set forth by various researchers [19], however the fundamental

principle – which is the belief that differentiation should promote higher level of thinking skills, creativity, and allowance for differences in process, product, and content domains continued throughout the time [20]. These components accentuate's [21] definition of differentiation which describes differentiated instruction as curricular elements the teacher has modified in response to learner needs.

According to [21][22], who is considered to be an expert in the field [23], DI is most frequently defined as an approach that ensures every single student's learning is aligned with the student's readiness level, interests, and preferred mode of learning. It is when the commonalities are acknowledged and built upon while student differences are embraced [3]. It can also be called as responsive instruction since it advocates active planning for student differences [24]. [25] argue that although the above definition is widely accepted by practitioners, the scientific literature does not report any theoretically based conceptualisation. With regard to that, [21][22][21] presented a comprehensive explanation of the concept using a differentiation model, and it is the theoretical basis for this study.

B. Differentiated Instruction Model

[3][21][26] explained the model of differentiated instruction which provides a synthesised framework to facilitate the standards of inclusion and adapted learning. As depicted from the framework, differentiation of instructional strategies can be classified into four components: content, process, product, and learning environments. Content is what the teacher wants her students to learn and the materials or mechanisms through which the learning is accomplished. Process describes learning activities designed to ensure that students use key skills required to make sense of essential ideas and information, and Products are the means through which students demonstrate what they have learned in the lesson. And lastly, the Environment is in which the teacher and her students continually grow in respect and caring for one another while creating a true community of learning [14][27][3][21].

To facilitate effective and appropriate differentiation of the above elements, teachers' understanding of students' levels of readiness, interests, and learning profile are required [14]. It requires teachers to know each of the students in the classroom on an individual level. Teachers need to understand how each child receives the classroom activities and fits the experiences into his or her own needs so that understanding takes place accordingly. In short, teachers must be well aware of "who they are teaching as well as what they are teaching" [14]. As such, through the means of different modalities, teachers must engage students in instruction by employing differing rates of instruction along with varied degrees of complexity [21].

C. Challenges for Successful Implementation of DI

Even though, the use of differentiated instruction has been supported to be an effective strategy for diverse learners [7][27][21][26], there are a number of factors that lead to differentiation not being applied effectively [9]. Following are some of these challenges reported from the available literature.

[11] conducted a mixed method study to identify DI practices and challenges teachers face when teaching students with learning disabilities. As reported by the authors, the main challenges found from the results include: (1) weak administrative support, (2) low parental support, (3) lack of time, and (4) shortages in learning resources. The study also revealed that the daily workload of teachers including documentation, paperwork and administrative burdens while lacking proper understanding and knowledge about DI strategies standing in the way of DI implementation which ultimately affects the education of students with learning disabilities.

In another study, after examining the impact of using DI approach to teaching undergraduate students at a tertiary institution, [7] found out time as one of the biggest challenges for teachers. The authors reported that, teachers need to spend long hours for planning, organising and scheduling individuals and groups in a large class setting when the strategy was implemented. It was found challenging to cater individual needs as well as students' preferences to work alone rather than in groups or with the whole class.

The above results were in accord with the findings of [10] who investigated differentiation in content and language integrated learning, and concluded that (1) time, (2) materials, and (3) physical classroom environment as the greatest challenges. In another study, [28] discovered ten potential barriers which are related to knowledge, skills, attitudes, resources, time, and support in which all found to be obstructing teachers' effort of DI implementation.

Even though the above evidences were empirically experienced in various contexts, there is deficiency of investigating the challenges for DI implementation in relation to inclusive education provided by mainstream teachers and SEN teachers distinctively. Hence, this study attempts examining these challenges in the context and fill in the gap in the current literature.

III. METHODOLOGY

A. Research Method and Design

The study employs parallel or concurrent mixed methods [29]. Data collection methods adopted in the study include an open-ended questionnaire as well as a semi-structured interview. The aim of using a mixed approach was to generate an overview of the result from a larger sample while getting an in-depth understanding through a detailed study of specific cases.

B. Participants

The target population of this study was all the elementary level mainstream teachers and SEN teachers working in Maldivian schools. Amongst these two cohorts, a total of 400 teachers (368 mainstream teachers and 32 SEN teachers) were randomly selected using convenience sampling where the teachers were selected based on researchers' convenience of accessibility to teachers. For the open-ended questionnaire, all the 400 teachers participated while, 16 teachers (8 mainstream,

and 8 SEN) from the survey respondents were purposively selected for the interview.

C. Data Collection and Instrumentation

Data was collected using a self-prepared survey questionnaire with open ended questions, and semi-structured interview. The survey questionnaire had two sections. Section A solicited demographic information of the respondents, which included their gender, teacher type, experience in teaching (no. of years), and training on special needs education. Section B comprised of two open-ended questions enquiring information about their perceived (1) definition of DI, and (2) challenges for DI implementation. The semi-structured interview attempted on seeking a deeper level of teachers' understanding about the above two aspects respectively.

D. Data Analysis

A qualitative approach was adopted to analyse data obtained from both the open-ended questionnaire and the interview. Answers for the open ended questions given on the survey questionnaire and the interviews were transcribed, and utilising an open coding strategy [1] data were analysed. For the ease of data retrieval and generating codes and themes, the software ATLAS.ti 7 was used as an aid, and flow charts that indicate the connection between the codes and their categories were produced using the software. Following the initial analysis, separate themes emerged from the survey and the interview were integrated and the final categories were deliberated. These final themes are reported in the findings and discussion section. For the systematic presentation of analysis, comments from the respondents were cited as they were stated by the teachers, and excerpts of the interview were reported with each teacher coded as T1, T2, T3...T16, respectively.

IV. FINDINGS AND DISCUSSIONS

Analysis of the data elicited important key findings that answered the two research questions. The findings are presented in three sections: (1) demographic information, (2) definition of DI, and (3) the main challenges for DI implementation. The following are details of each of these components.

A. Demographic Profile of Participants

Analysis of the demographic data reveals that there are 59 (14.8%) male and 341 (85.3%) female teachers who participated in this study. In terms of the type of the teacher, 368 (92%) of the participants were mainstream teachers while 32 (8%) were SEN teachers. This elicits a proper representation of SEN teachers within the teacher population as shown from the statistics of MoE [13]. With regard to the training of special education, 106 (26.5%) teachers delineated that they had no training at all. A total of 171 (42.8%) respondents stated that they have undergone short term training such as in-service Professional Development (PD) and workshops on special needs education. Likewise, 71 (17.8%) reported that their training was a part of pre-service teacher training programme while 26 (6.5%) teachers had the training by a programme

which was exclusively on special education (eg: BEd in Inclusive Education). With regard to their teaching experience, 253 (63.3%) teachers had less than 9 years' of experience, while 103 (25.8%) teacher have been working for 10 to 20 years. And 24 (6.0%) teachers had more than 21 years' of experience.

B. Definition of DI

Results of the current investigation discovered three specific components that define differentiated instruction: (1) use of different strategies (2) addressing student diversity, and (3) advancement of student learning.

1) Use of different strategies: When asked to define DI, around 45% of survey respondents associated it with the use of a variety of different instructional strategies. Teachers delineated expressions such as: "teaching to different levels of students using different strategies and materials", "designing different instructions to different students", "providing different strategies, and showing different ways" and so forth. During the interview, more or less similar statements were expressed by the teachers. However, when asked to give in examples of such strategies, the interviewees elaborated it with examples. For instance, T2 - a SEN teacher who had a BA in Inclusive Education expressed the following in relation to different strategies used to assess students' learning.

When we assess them, we have to believe that there are various ways of methods to assess them. For some students it will be easy to give oral presentations. So we just allow it. What's wrong with it? Some students find hard to write. Give them a type writer. Or a computer. Ask them to submit a paper... there are so many other ways. Eventually we are focusing on what the student is learning. So it doesn't have to be in one way.

Further, T8 described a different scenario of her strategies, "for example, if I carry out a lesson on text type, I can change the word limit. That's we call differentiating the product. For one student we can give a picture, for the other, we can give words".

Use of a variety of instructional strategies is one of the significant characteristics used to define DI in most of the existing literature (see: [21][30]). While defining DI, [21] stated that, DI can be employed through a variety of instructional strategies by differentiating content, process, product, and learning environment that is aligned with students' readiness, interests, and learning profiles. Parallel to the above, [30] defined DI by highlighting the use of the strategies delineating that to use appropriate instructional strategies, teachers need to be cognizant of their students' individual differences. [3] called the strategies as multiple options for taking in information, making sense of ideas, and expressing what students learn. Hence, in reference to the above literature, it can be postulated that the way DI is defined by teachers of this study is appropriate in terms of the importance of employing multiple teaching strategies to cater student needs.

2) *Addressing student diversity*: It was found that while emphasising variation in instructional strategies, both survey and interview participants articulated different instructional strategies conjointly with student diversity. Many survey respondents (around 38%) stressed learner diversity through expressions such as “different skills and talents”, “variety of learning needs”, “individual capabilities”, “different ability levels”, “different backgrounds”, and “unique way of learning and thinking”. Additional to the survey findings, learner diversity was echoed with equal intensity by the interviewed teachers. For instance, T16 reported, “it is teachers’ understanding the different levels of the students and then teaching to these different levels”. T14 also noted, “it is teaching that is aligned with the students’ needs and levels”. Hence, both the survey and interviewed findings showed similar strands explicating DI as attending to individual students by providing tasks and activities that are appropriate to the level of the students.

The above results are in line with literature prevailing that addressing student diversity is one major aspect of DI. A chief objective of differentiated instruction is to address diverse student levels, needs, and interests [21][31][32][33]. DI means responsive teaching whereby the teacher embraces the differences and tailors instruction to the needs of the students. And when the differences are well accommodated, students learn best [34]. These literature confirms that the current study’s findings of addressing learner variance can be an appropriate way to define DI.

3) *Advancement of student learning*: Teachers also described their definition of DI with a high emphasis on student learning, and it was the third most significant theme derived from both the survey and the interview findings. A large number of survey respondents (28% of the total responses) expressed the importance of student learning because of the effective use of DI strategies. Teachers associated DI with expressions corresponding with students’ “ability of learning”, “learning goals”, “learning needs”, “levels of understanding”, “learning styles”, “unique way of learning”, “different avenues of learning” and so forth. A similar trend was observed from the interview findings which were in line with these terminologies.

T2 - a SEN teacher noted how the learning is enhanced in her differentiated class. She reiterated, “maybe it’s from the same topic, but give some more extensive bit to the child who knows more. Who has the previous knowledge about those things. And ask him to do somethings more”. Similar to these statements, many of the teachers confirmed that DI is all about providing different students with different avenues of learning.

The above findings are also parallel to how DI is defined by other experts of DI. For instance, [21] delineated how learning is enhanced in a differentiated classroom. She reported, that in order to advance student learning, teachers have to provide individualised assistance so that each student can learn as deeply as possible and as quickly as possible without having identical learning roadmaps for all the students. [35] emphasised the importance of connecting new learning of students to their prior knowledge. The authors claim that, DI is

about embracing individual differences, while structuring learning activities in ways that help students create connections with new information. Therefore, as indicated by these experts, and the findings revealed from the current study, the main aim of DI is to take full advantage of every student’s ability to learn.

In addition to the above three themes, there are certain points that need to be highlighted from the analysis. First, despite the above precisely explicated aspects of definition, the analysis revealed some instances where teachers revealing wrong concepts of DI. As such, amongst the interviewees, three participants gave out incorrect explanation, while seven of the sixteen teachers reported lack of understanding. For instance, T5 - a mainstream teacher who had 13 years’ experience with a Masters qualification fallaciously defined DI as giving verbal and written instructions to their students. However, when a brief explanation about DI was given to her, she stated that, “actually I think I’ve learned that one, but have forgotten it”. In another instance, T3 echoed similar verdict reporting DI as a synonym for commands or requests. On top of these misconceptions, there were teachers who had no idea about what DI and its principles are. Both T4 and T7 reported that though they have heard about the term, they have no clue of what it is and what it consists of. T7 stated, “I am not aware about it. So I’m not able to include those areas”.

Strikingly, the analysis revealed that all the above teachers who had misconceptions and who had complete lack of knowledge about DI were mainstream teachers. Therefore, this finding indicates that compared to mainstream teachers, SEN teachers in general are more familiar and have better understanding about the concept. The interview analysis also revealed that even though these teachers lack basic knowledge, some of these teachers have mild level of SEN students in their mainstream classrooms. Therefore, it is crucial for these teachers to acquire knowledge about DI if the needs of all the students in their respective classes have to be attended, and the curriculum delivery has to be effective for the students.

The second point noted from the analysis is that, although the model of DI [21] explains differentiation using four main components: (1) content, (2) process, (3) product, and (4) learning environment, almost all the participants focused their definition heavily on the content and process only. Very few participants highlighted product and learning environment to define the concept. Thus, it shows that teachers possess limited knowledge about the DI model in general, hence, owing to this reason, it could be postulated that DI is not only a challenge to practice, but it is also difficult to understand. Teachers’ ambiguous and even misinformed descriptions are a good indication to support this notion.

C. 4.2. *Challenges for DI*

The responses of the survey which were about the challenges for DI implementation were thematically analysed and the emerging categories were identified. Later, these initial categories were grouped as final themes, and they were ranked in order of the highest to lowest. Hence, the highest ranked six major themes pertaining to challenges were: (1) time, (2) resources, (3) knowledge, (4) class size, (5) support, and (6)

workload. Time factor was the biggest challenge teachers experience in their effort of DI implementation. Likewise, almost half of the respondents considered lack of resources and lack of knowledge, while class size and support from the school management was identified with approximately a quarter of the responses. The lowest ranked challenge was the workload which got 14% of responses.

The above findings were also confirmed by the interviewed teachers who expressed the components as grave barriers for DI implementation. T3 responded, "it's the workload and time that hampers the implementation", while T6 added, "it's a lot of work. We need to prepare a lot. We need to focus on different areas and levels". In addition to the time and workload, interviewed teachers reported lack of resources, lack of management support, and larger class size. Teachers also highlighted their lack of knowledge about the concept of DI.

Meeting the needs of a diverse student population is one of the most persistent and daunting challenges educators experience at all levels [36]. Findings of this study validate the accuracy of this proclamation. There are a number of empirical evidences in literature that are in accord with the current findings (see: [6] [10] [11] [28]). These studies confirm that teaching a heterogeneous student population is difficult, and the difficulty increases if teachers are ill-prepared for the challenges. In the presence of these challenges, teachers often feel reluctant and consider DI as a top-down school policy and a fad [37]. Hence, addressing the challenges is mandatory as it can avoid teachers resorting to the norm of "teaching to the middle" as [21] proclaims.

V. CONCLUSIONS AND IMPLICATIONS

Investigating how teachers define the concept of DI and its potential challenges is crucial for improving its implementation. In the current study, teachers' definition was associated with three major components: (1) use of different strategies (2) addressing student diversity, and (3) advancement of student learning. In addition to the above three categories, teachers' limited knowledge with misconceptions and fallacious assumptions were also identified. Additionally, six major challenges that impede successful implementation of DI were identified including (1) time, (2) resources, (3) knowledge, (4) class size, (5) support, and (6) workload.

The above findings are useful not only because they add to the literature and rekindle the need for discussion about DI. The findings also imply important facts that need to be addressed. First of all, the signs of lacking adequate knowledge and misconceptions about the definition indicate a greater need for more training and knowledge delivery for teachers. Inevitably, use of DI in inclusive classrooms can be possible through systematic, focused and continuous professional development, teacher training, and support [38]. Hence, it is mandatory that the knowledge dissemination takes place through ongoing training and continuous practices. For instance, theoretical concepts, lesson demonstration, and hands-on activities through the means of peer coaching, action research, study groups, or workshops can allow dialogue and

consultation about how techniques are implemented in the classroom [39][40].

Furthermore, the study revealed mainstream teachers lacking the knowledge more than SEN teachers, therefore, the study suggests to review and improve teacher training and professional development programs held for mainstream teachers in the area of differentiated instruction. It is necessary to incorporate the components of DI into the curriculum of teacher training programmes held at school level and teacher training institution levels.

In addition to the above, the potential barriers identified from the current study give educators, policy makers, and practitioners valuable insight for improvement. While disseminating knowledge about DI, stakeholders need to eliminate the challenges as buffering the challenges will facilitate better implementation. School administrators should closely supervise and evaluate the practice of instruction while developing a critical understanding on how to help teachers deal with these difficulties. Lack of time for both planning and execution was reported to be the biggest challenge for DI implementation. Hence, school administrators and policy makers should consider reducing teachers' workload and extending the duration so that teachers can facilitate better planning and implementation. Additionally, it is necessary to provide teachers with adequate support, guiding and aiding them with a rich array of resources and technical assistance [8][41].

Findings from this study contribute to the pragmatic understandings of how teachers define the concept of DI and the challenges experienced in implementing DI strategies. However, there are certain limitations that are pertinent to this study. The study used only two methods for data collection. Though, the interview facilitated deeper level of teachers' understanding, the survey questionnaire has only open ended questions which limited a robust quantitative analysis. Hence, to confirm and for accurate generalisation of findings, future studies can conduct a descriptive survey in which a more structured analysis is adopted. Further, teachers' level of implementation can be best examined by observing their teaching of everyday lessons. Hence, future studies can include observation as an additional data collection method.

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