

Barriers and Coping Strategies of Students with Disability During Inclusive Learning in Higher Education

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ARTICLE INFO

Article history:

Received: 29-05-2022

Revised: 16-07-2022

Accepted: 22-07-2022

Kata kunci:

Siswa berkebutuhan khusus; kelas inklusif; hambatan belajar; strategi koping

Keywords:

Students with disability; inclusive class; learning barriers, coping strategies

ABSTRAK

Jumlah penyandang disabilitas yang mengikuti sistem Pendidikan inklusi di perguruan tinggi semakin meningkat seiring dengan adanya Kartu Indonesia Pintar (KIP) Kuliah. Penelitian ini bertujuan untuk mendeskripsikan tantangan hambatan yang dihadapi mahasiswa disabilitas selama mengikuti kuliah inklusi dan strategi koping mahasiswa dalam mengatasinya. Penelitian ini bersifat deskriptif kualitatif dan data dikumpulkan dengan teknik interview, observasi, dan dokumentasi. Data dianalisis dengan metode analisis studi kasus. Hasil penelitian menunjukkan bahwa mahasiswa tunanetra menghadapi hambatan belajar terkait teks, gambar atau simbol/angka, sedangkan mahasiswa tunadaksa memiliki hambatan terkait aktivitas fisik. Strategi koping yang dilakukan oleh mahasiswa adalah dengan menggunakan Assistive Technology (AT), meningkatkan komunikasi dengan dosen, dan melakukan diskusi kelompok. Dari temuan di atas, disimpulkan bahwa teknik pengajaran dan materi perkuliahan harus beaptasi dengan kebutuhan murid dan dapat digunakan secara universal.

ABSTRACT

The number of disabled students enrolled in the inclusive system in higher education has increased due to a card used to access colleges issued by the Indonesian government known as Kartu Indonesia Pintar Kuliah (KIP Kuliah). The research aims to describe learning barriers encountered by students with visual and physical disabilities during inclusive class and their coping strategies to overcome this predicament. The research is qualitative descriptive, and data were collected by interview, class observation, and documentation. The data were analyzed by using the case study analysis method. The results indicate that written material containing text, pictures, and symbols/numbers are barriers for visually disabled students, while physically disabled students have barriers in terms of class that requires physical activities. Students' coping strategies are using Assistive Technology (AT), increasing communication frequency with the lecturers, and conducting study groups after class. It is concluded that the lecturer's teaching technique and material should be adapted to meet the students' needs and should be universal.



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INTRODUCTION

Disability, according to Law of the Republic of Indonesia No.8 of 2016 on People with Disability refers to everyone who has physical, intellectual, mental, and/or sensory limitations for a long period of time that leads to barriers and difficulty in participating fully and effectively with other people equally (UU Nomor 8 Tahun 2016 Tentang Penyandang Disabilitas, 2016). Students with disability have the full potential of living a life and contributing to social, cultural, and economic development. Therefore, the government should provide the same opportunities for them to develop themselves. Education is one of the places for them to thrive and equip themselves with the skills they need, so they can contribute to society after they graduate. The right to education for people with disability is stipulated in Article 10 of Law No. 8 of 2016 and Article 40 paragraph (2) of Law No. 8. It is clearly stated that the disabled's right to education is included in the national education system through inclusive education and special education. The notion of inclusive education is defined as 'Education that Fits' or 'A School for Everyone' (Mitchell, 2005). In other words, it means that education must fit the diversity of learners we find (or should find) in every school, every classroom, and every country. In an inclusive class, the students with and without disabilities learn together in the same class or the same school. The purpose of inclusive education is to provide all students with the most appropriate learning environments and opportunities for them to best achieve their potential. In higher education, students with disabilities should get the opportunity to go through an international experience (Du Toit, 2018).

In higher education, the success of inclusive education requires much effort and resources. Studies conducted in South African show that there are many different role players involved and could be—if they worked together—for incoming and outgoing students with disabilities in the pre-departure, study, and return phase (Van Hove et al., 2018).

However, the practice of inclusive education in higher education namely colleges or universities may sometimes become a challenge for both lecturers and students themselves. Lecturers, for example, are required to work harder to prepare the material so that all students can understand the material given and to find or modify their teaching method or approach to create an effective learning experience. As for students with disability, inclusive education may become a challenge for them since they must be able to attend the class as regular students and do all the activities/tasks given by the lecturers despite the constraints.

Inclusive education literature reveals that, despite inclusion's strong advocacy, delivery remains problematic, as 'beyond the surface of institutional policy, the reality of university life for students with disabilities is one of continued exclusion and barriers to learning' (Gibson, 2012). In fact, students with disability face much more barriers during class due to their disabilities; compared to regular students. However, they are expected to perform academically at the same levels as their non-disabled peer (Couzens et al., 2015). To achieve this requirement, they must do certain task twice harder than regular students during the class. During the pandemic covid 19, for example, they are compeled to be able to adapt to hybrid learning as a result of pandemic. Many students with disabilities struggle with an online learning schedule because they need a more structured learning environment and interactions with their peers and teachers (Smith, 2020).

Based on this facts, it is important for institutions to identify and provide support for them (Kayhan et al., 2015). It really means that schools or higher education have to re-examine what they teach, how they teach and how they assess learner's performances. It requires a paradigm shift in education – for the benefit of all learners (Mitchell, 2005).

Inclusive class implemented in Indonesia Institute of Technology and Business is a new program due to the implementation of *KIP Kuliah Program* from the government. The lecturers and students with disabilities have not been trained to teach and learn in inclusive class so both of them try to adapt to this new program. Therefore, the inclusive class becomes a challenging experience for them.

The adaptation conducted by lecturers can be done in many ways. Robinson (2002) states that high school teachers employed two primary learning methods of instruction in inclusive content area class: (a) lecture with note taking and (b) cooperative learning with hands-on activities. Teachers reported that note taking was important for all students, regardless of

disabilities, to be engaged in the lectures through note taking (Boyle et al., 2015). Finally, in postsecondary settings, 98% of college students reported using note-taking skills in their classes to learn course content (Brobst, 1996). Therefore, note-taking skills is considered to be a critical method of acquiring content knowledge because lectures represent the dominant form of conveying content information to students.

Meanwhile, during the lectures or discussion, note taking for visually-impaired students can be difficult task to perform. During lectures, students must listen and process information, discern important from less critical information, and paraphrase the information so that it makes sense when written in notes, all the while the teacher is presenting the next lecture point (Boyle et al., 2016).

For students with disabilities, one of the ways to cope with inclusive class is by using AT. AT is defined as “any product whose primary purpose is to maintain or improve an individual’s functioning and independence and thereby promote their wellbeing” (Khasnabis et al., 2015). In the classroom environment, AT is used for a variety of purposes such as communication, positioning, mobility, hearing and vision, physical education, and instruction in reading, writing, and mathematics (Biancarosa & Griffiths, 2012).

There are variety of AT that can be used to help disabled students in learning. AT refers to the devices and services that are used to increase, maintain, or improve the capabilities of a student with a disability (Dell Newton, Deborah A., Petroff, Jerry G., 2012). AT that helps students with learning disabilities includes computer programs and tablet applications that provide text-to-speech (e.g., Kurzweil 3000), speech-to-text (e.g., Dragon Naturally Speaking), word prediction capabilities (e.g., WordQ), and graphic organizers (e.g., Inspiration).

The use of AT may be the answer to ease their problem but not entirely solve it. When students use AT such as the tablet, for example, they can quickly and easily find word meanings and the background knowledge they need for reading comprehension (Biancarosa & Griffiths, 2012). However, there are some disabilities that still limit students’ capacities to actively engage in coursework even with the aid of AT. These types of difficulties are exacerbated in the organizational and structural characteristics of higher education environments e.g., large numbers of students in noisy lecture theatres, buildings with poor accessibility (Mullins & Preyde, 2013). As a results, it is necessary for lecturers to adapt their teaching method and approach during inclusive classroom, especially during hybrid learning.

Therefore, lecturers play a very essential role in their education. As Becker & Palladino (2016) states that it is the individual faculty member who interacts directly with the students in the classroom and can make the greatest impact on or become a barrier to student success. Students with disabilities need support systems that consists of include emotional, practical, and professional support. By utilizing support systems, students with disabilities have a better chance of achieving academic success (Jairam & Kahl, 2012).

Thus, this research aims to describe the learning barriers encountered by students with disabilities during inclusive class where the lecturers are not trained to handle inclusive class before. It also investigates how they adapt and solve their learning problems and how far the AT help them during the inclusive class. By understanding learning barriers faced by students with disabilities and how they cope with the predicament to meet the class requirement, lecturers can discover strategies the students adopt and use sucessfully during the course, so it would help lecturers identify more accurately the students’ instructional needs.

METHOD

The research is descriptive-qualitative. Due to the limited number of disabled students registered in *KIP Kuliah* in 2021, all disabled students become the population, that is eight students. The participants were then selected by using the purposive sampling technique, and six students were selected as research participants due to their high rate of attendance (90%). These six students are the first batch who join the inclusive class in IT & BI.

The participants consist of 4 students who are totally or profoundly blind, 1 partially blind and 1 student who are both physically disabled and partially mute. All participants live in North

Sumatera, namely Medan and Deli Serdang and have sufficient English ability to engage in conversation. They also had been registered at the university for two full semesters prior to the semester when the study was conducted. These two criteria were established in order to select the participants who were familiar with how their disabilities impacted their daily lives and to learn to what extent they can cope with their learning barriers.

Data collection

Since the objective of the research are to investigate the disableds' learning barriers and coping strategies, the data collection technique is conducted by using interview, observation and documentation. A narrative inquiry case study approach was adopted so the participants can explain based on their point of view without limitation. As Daiute & Lightfoot (2004) in Simons (2009) stated that a narrative approach lets informants reveal their world from their own point of view and can lead to better insights into each case.

For partially-mute student with physical difficulty, the interview was conducted through writing using laptop. The participant was asked to type the answers using his laptop. In the case of students with vision and mute disability, interview is conducted orally using an open-ended interview guide which has been designed in accordance with the research need.

The interview was conducted in Bahasa Indonesia. During the interview process, other questions were introduced by the researcher to probe for deeper meaning or to follow the participants' particular line of thought. The interview questions were constructed by focusing on the purpose of the research and allowing the participants to tell their own story on their own perspectives. Therefore, in the initial interview, participants were asked to describe their history of learning, and to tell as much as possible about their previous learning experiences.

Semi-structured questions in the form of open-ended questions were used and were then adjusted or supplemented as necessary during the process of interview. Interview was conducted individually, recorded using android recorder and transcribed. The researcher also conducted observations during inclusive class. The results of interview and observation were documented.

Data analysis

During the interview, the participants were asked to tell their story of disability, report all the difficulties they encountered amid hybrid learning, and how they overcame these challenges. Then, they were asked to report the facilitation, which helped them cope with a difficult situation if they used AT. Data obtained then were analyzed using the qualitative data analysis method to describe the phenomenon accurately. The procedures for data collection and analysis followed the phases suggested by Yin (1991), which consists of compiling data into a formal database, assembling data in the database to enable formal coding, reassembling data to reveal emerging patterns, and interpretation (Yin, 2014). Then, the conclusion was drawn through the process of pattern matching which is by comparing the data to find similarities in learning barriers and coping strategies.

RESULTS

The results are presented in the form of brief life and learning story. The students were asked to describe their history of learning, disability, and experiences to identify their situation accurately (see Table 1).

SWD, Female, 23, Total blindness

She was born prematurely as twins in the age of 7 months. She lost her vision during 7 months in the nursery's incubator, while her sister was healthy after 7 months in incubator and was permitted to go home. She lost her vision when she was treated in incubator due to nurse negligence. The nurse forgot to adjust the incubator's air mixture and cause total blindness. This is because too much oxygen in an incubator could cause infants to lose their sight. After that, she was referred to ophthalmologist and diagnosed with cataract by the doctor. She was prescribed some eye drop medication and pills to treat the eye by the doctor but unfortunately it worsened her condition due to misdiagnosed. She, then, was brought to Singapore and found out that her optic nerve and cornea has damaged due to medication she has consumed.

Table 1. Students' learning barriers

Name	Age	Gender	Disability	Learning Barrier
SWD	23	F	Total blindness	When all programming materials are presented using projector and the lecturer does not dictate the content of the slide.
AFS	23	M	Partial blindness	
DAS	20	M	Total blindness	When AT can not read the pdf file and lecturer does not dictate the content of pdf during the class.
F	22	M	Total blindness	Power point and pdf containing pictures or charts. Math material containing formula either presented in the ppt, pdf or written on the whiteboard during the lecture.
M	23	M	Total blindness	Written material containing pictures and symbols in algorithm class.
FA	24	Male	Physical Disability and Partially Mute	Class practice involving speaking and moving such as English-speaking practice, presentation, and laboratory practice.

She prefers learning in inclusive class because she thinks that inclusive class has many benefits for her, namely she can socialize and learn people characters. The learning barriers she faces during inclusive class occurs when she meets a teacher/lecturer or friend who are not welcome or do not communicate well to them. She has to approach or initiate the communication first in order to overcome this problem. Inclusive class encourages her to be independent knowing that students with disability will not stick together forever. She trains her mentality during inclusive education to prepare herself for working life.

During the class, she has difficulty in programming subject where all material is presented using projector. This condition becomes a challenge for her if the lecturer does not dictate the programming slides to her. This is because every written material needs to be dictate/ narrate so she can understand. She overcome this barrier by asking for help from friends and staying positive if the lecturer cannot dictate it directly to her. She also solves the problem by reading a supplement book by herself at home. She uses screen reader to help her during the class and learning at home. She installs it in the laptop and android (talkback app). She teaches herself to use these apps with the help of a friend. Teachers only introduced this app to them so she learned to use it by herself. She can type with 10 fingers. She hopes that written material containing codes can be dictated.

AFS, Male, 23, Partial blindness

He was born with cataract. At the beginning, the cataract did not influence his eyesight. At the age of 2 months, the condition become worse so he was brought to seek medical treatment at the age of 1 year but the condition became remain same. He could see people movement in the form of shadows and still able to identify colours in near distant. He was suggested to undergo eye transplantaion but he refused. It was too risky and could worsen his condition if the transplantaion was not successful.

He has the same difficulty as SWD. During the class, he uses screen reader, CSR, talkback, JAWS, NVDA and narrator. He teaches himself to use these apps with the help of a friend and teacher at school. He also can type with 10 fingers. He hopes that written material containing pictures can be dictated or there are make props available especially for maths.

DAS, Male 20, Total blindness

He was born normal and had a visual problem from the age of 1 year until 2,5 years. At the age of 2,5 years, he was diagnosed to have malignant tumour in his eyes and had to be operated. It was told that the tumour had been existed during pregnancy but not detected. He loves science but have difficulty in continuing his interest due to his limitation in science practice. He plays audio game to increase his English and loves to chat with foreigners during online. He is a moody person. He learns to memorize all material/ info during the class.

He enjoys inclusive class since Senior High School in Dumai because he found that inclusive class was more fun and challenging. Similar to his friend, he also thinks that he needs to mingle with regular people to be able to survive. He thinks that inclusive class is only for people who like

challenge. In the aspect of community, the attitudes of regular students are very positive to him and he has no difficulty in socializing. The barriers related to teaching and learning, for him, can be solved by communicating to lecturers about what learning solution is best for them so communication between lecturer and students is key. He uses AT like screen reader. It functions to read all text including typing. He learned to use AT by himself and it was introduced by his disabled friend. By using AT, all barriers can be overcome so far.

F, Male 22, Total blindness

He was born normal until the age of 15 years old. After graduating from junior high school (2015), he was diagnosed with glaucoma. Since then, he had been losing his eyesight gradually for two years. In 2017, he was totally blind. He loves inclusive class because he went to regular school in West Sumatra before diagnosed glaucoma. He thinks all regular students in the campus are very welcomed and supportive.

Learning obstacles he faces during inclusive class occurs when he has to deal with written material such as power point and pdf containing pictures or charts. For example, it is more challenging for him to learn math material either presented in the ppt, pdf or written on the whiteboard during the lecture. He overcomes this by asking for his friend assistance to read it or describe it for him so he can understand it well by imagining it. Sometimes, during difficult class like math and programming, he failed to understand the material explained because he cannot understand completely without further study at home with regular friend. So, he and his friends usually overcome this condition by doing study group to review what they have learned at the class. AT was introduced by his disabled friend but he learned to use it by himself. He also feels that all barriers can be overcome by AT.

M, Male 23, Total blindness

He was born blind. He loves TIK (Information and Communications Technology), IT related subjects and English. He is a quite person. He prefers inclusive class because compared to SLB (Special Education School), he went from elementary to Senior High School, inclusive class is more exciting for him because of the lively interactions among friends and he can have more friends.

According to him, there are differences in curriculum he learned in SLB and in inclusive education. For example, the level of depth and difficulty in math in SLB is lower than in inclusive class in regular school. He thinks maybe this condition occurs due to the limitation of disabled learners. Therefore, he decided to join inclusive class so he can learn and get the same opportunities like regular students. He also thinks that maybe the limitation of teacher in teaching further causes this condition. He also has difficulty in learning material containing pictures. He also uses screen reader. Basic AT is introduced by teachers and he learns to use it by himself by joining some online training.

He has difficulty during algorithm class. Although they always a group discussion at home, they still cannot overcome the problems. So, it is suggested that the lecturer gives extra time after class to review or discuss the material given so they can understand completely. Only by narrating is not enough to understand algorithm, such as formula. He also said that the existence of technology and AT nowadays has a significant impact on their learning. They can get as much information as regular students with the aid of AT. Therefore, braille has no longer used by them to read. He also said that if he still studies in SLB, maybe he still uses braille occasionally and he certainly can miss much information.

FA, Male 24, Physical disability and partially mute.

He was born with physical and speaking disability. He has difficulty in talking, walking, and in using his hands due to stiffness. When he was a child, he could not walk until he reached the age of 9 years old. During that time, he was just crawling inside the house. He loves math and technology and information although he knows sometimes he has difficulty in drawing pictures related to math and technology. He is a moody person so he studies depends on his mood. His barriers occurs during English class especially if there is some speaking practice or test he has to complete. Due to his condition, he cannot deliver a speaking presentation or practice so the lecturer ask him to write the answers on the piece of paper or type it by using android.

Although it is the first time for him to join inclusive class, he prefers to be put in inclusive class because he can socialize with regular students and have many friends. Formerly, he really

wanted to go to inclusive class but his parents worried of bullying in that time. Since he can see clearly, he usually helps his friends with visual disability to walk and study. This condition encourages him to be more independent and stronger. However, sometimes it was still hard for him to make friends with regular students because some regular students love to help them but not to make friends with them. Another barrier occurs when he has to join practice in the laboratory. His physical condition limits him to do all kinds of physical practice and it takes longer time for him to do a certain task. It leads to low score in some subjects.

To overcome these barriers, he does not have certain strategies. This is because AT does not facilitate physical disability students like visual ones. However, to minimize it, he prefers to type using his laptop or android for writing or speaking task. It is easier and faster for him rather than writing due to his hands condition. So, in general, he is the same as regular students during the class.

DISCUSSIONS

Based on the findings, all students with visual disabilities face a similar problem. They face difficulty dealing with written material that contains text, symbols/ numbers, and pictures. Therefore, they need assistance to read or narrate what is written or presented in front of them. Strategies they develop to cope with this situation are by using AT. Android-based application is also sufficient for learning. For example, in attending programming class, the learning application of the android-based basic programming laboratory only requires an Android smartphone with a 6.0 version since it does not require high specification (Al Hariri et al., 2021). Students with visual disability can also access all printed material as long as its PDF or Epub format are available.

Compared to two decades ago, today's learning is more possible to do thanks to technology because there were two problems constrain the availability of accessible textbooks in the past. The first is a problem of policy, the second is a problem of technology (Rose et al., 2005). Recently, this no longer be a problem. According to students with visual disability, they only need to learn how to type with 10 fingers, how to operate the laptop, android and software by themselves and it is relatively easy for them. This is possibly because they have already had interest in technology since before continuing their study to college. However, these barriers will be difficult to resolve if disabled students are not equipped with technology or AT. All the elements involved are related to each other, especially when it comes to personal factors such as access to money, which conditions the effects of the rest of barriers and facilitators (Merello, 2021).

The learning barriers that cannot be overcome by visually disabled students occur when it comes to class/material that uses coding, symbols, and formulas. According to them, although they usually cope with difficulties by doing group discussions with friends after class and using AT, it mostly does not help them comprehend the material, such as algorithms and programming. Therefore, they require a lot more effort and time to master these subjects. Since they cannot see, AT functions as their eyes. If AT cannot read it for them, they will not be able to comprehend it. In addition, visually disabled students also rely on memory. They are able to understand something by imagining it, so they rely on other senses, such as hearing and touching. On the case of student who suffers from physical and partially muted disability, AT does not really beneficial. This student does not have any problem in accessing and understanding the teaching material presented to him. He faces different types of challenge compared to visually disabled students. Learning becomes challenging for him if he requires to speak or move his body to do certain task. Thus, this physical condition also influences his performance during English class, especially during speaking practice or other subjects that requires oral presentation. Due to his limitation to speak, he cannot do presentation or speaking as regular students or visually disabled students.

Writing is also a difficult task for student with physical and partially muted disability. The hand stiffness makes writing by hand impossible to do. Therefore, he overcome this barrier by typing the sentence using laptops or android which today's regular students also use during the class. AT software/ application like screen reader and talkback is not useful for him. Typing with laptop also requires more time due to fingers movement limitation. In addition, this leads to impairment in social interactions and devaluation of an individual. In terms of social interaction,

it is found that regular students in the college are more welcome compared to senior or junior high school in inclusive education. Although, they some of disabled students sometimes feel that regular students approach them only to assist them as classmates. College students tend to be more mature mentally and cognitively compared to high school students. Therefore, lecturers in inclusive class can get more benefit from this situation.

Based on their experience and story, it indicates that they have had a mature mental capacity that encourage them to overcome emotional problems regarding their limitation in inclusive class. It is indicated from the way they explain their positive feeling and point of view about their environment, friends or limitation that sometimes gives them difficulties. Despite the maturity and learning persistency of disabled students, lecturers are required to give the best teaching quality and education to all students. One of the issues that hamper progress is the lack of educator skills in adapting the curriculum to meet a range of learning needs (Chataika et al., 2012). The mainstream lecturer who is assigned to teach the inclusive class is required to do some adaptation in their teaching technique and approach, so all students can comprehend the material successfully; for instance, by providing more interactive and attractive learning media for universal use. Media presentation is required to create a more interesting and interactive learning, such as the use of multimedia element in the form of text, pictures, sound, video and animation.

The adaptation of material can be conducted by implementing Universal Design for Learning (UDL). UDL is one such framework that conceptualises and addresses the need for a more flexible curriculum designed to lower the barriers and to enable learners with widely varying needs to be included in the learning process (Brand et al., 2012). Reich et al. (2020) recommended that when considering curriculum materials in online learning, schools should also incorporate non-digital alternatives (e.g., public television, printed packets) in addition to digital platforms such as Google Classroom or Khan Academy.

In the case of hybrid learning, the circumstance can also be more challenging. Educators have learned that providing instruction in a classroom setting and providing instruction in an online setting is not only different but challenging (Young & Donovan, 2020). While 42% of teachers reported difficulty in receiving adequate support and guidance for working with students with disabilities (Hamilton et al., 2020). This can occur due to difficulty in learning new technology, learning management systems, and how to provide online instruction, especially to students with disabilities. Therefore, communication is key for teaching disabled students and the willingness to do spend extra work on teaching material that is universal for all students. There are more opportunities to expand instructional repertoire by implementing various instructional methods by engaging students using virtual learning strategies and platforms, incorporating the principles of UDL, inviting collaboration with fellow educators, and maintaining communication with students and parents (Smith, 2020).

CONCLUSION

It can be concluded that students with disabilities encounter learning barriers due to their limitations. The students with visual impairment encounter barriers related to materials containing symbols, pictures, and formulas/coding presented in the slides, pdf, written text, or written on the whiteboard, while physically disabled and partially muted students encounter far more barriers compared to visually disabled students as long as it requires speaking and physical movements such as writing, typing, and other kinds of laboratory practices. Students with visual disabilities overcome their barriers with the aid of AT, although it is not always reliable for them when it cannot read the files, while the physically disabled and partially muted student cannot overcome the barriers without assistance from the lecturers or other students. For example, lecturers provide substitution practice for speaking tasks with writing tasks.

AT is very beneficial and helpful, but it is designed only for visually disabled students. It also can only ease the difficulty but not solve the problem entirely for students. Therefore, the learning barriers encountered by students with disability can be minimized or solved with the collaboration between the students, lecturers, and faculty. It is suggested that lecturers take special pieces of training before teaching an inclusive class and provide some learning alternatives

or adjustments to achieve the universal learning standard. The diversity of learning needs and potentials should be properly addressed in an inclusive setting to ensure education for regular and disabled students.

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